WEST LAFAYETTE
FIRE DEPARTMENT

300 NORTH ST.
WEST LAFAYETTE, IN 47906
765-775-5175

2014 or NEWER
BID SPECS

FIRE APPARATUS
PUMPER WITH CAFS
750-1000 GALLON

750-1000 GALLON PUMPER WITH CAFS	Bidder Complies	
	Yes	No

West Lafayette Fire Department 2014 or Newer Bid Specs
750-1000 Gallon Custom Pumper with CAFS,
With all equipment and loose equipment as specified,

$_____

Less Trade-In of 1999 Pierce Quantum Pumper,
Job#10468, VIN #4P1CT02EXXA001682
Unit specified in bid as trade-in apparatus, no equipment with trade-in,

Less, Trade-in, - $_____

Total Bid Price, minus Trade-in, $_____

Bidder: _____
Company

Signature: _____ Title: _____
Name

Date: _____

DEDUCTION TABLE:

Items listed are items with their cost and labor cost that may be deleted from Total bid price.

- Rear Camera System -$_____
- Elkhart Stinger Deck Gun(Gun Only) -$_____
- PPV Fan (Super Vac) -$_____
- TFT Nozzles -$_____
- Rescue 42 Struts -$_____

REQUIRED PROVISIONS

1. Prevailing party – attorney fees

Notwithstanding any term or condition in this Contract to the contrary, in the event litigation is commenced to enforce any term or condition of this Contract, the prevailing party shall be entitled to costs and expenses of litigation including a reasonable attorney fee.

2. Engaging in activities w/Iran

By signing this Contract, [Vendor or Contractor] certifies that it is not engaged in investment activities in the country of Iran as set forth in I.C. 5-22-16.5.

3. E-Verify

[Vendor or Contractor] shall comply with E-Verify Program as follows:

a. Pursuant to IC 22-5-1.7, **[Vendor or Contractor]** shall enroll in and verify the work eligibility status of all newly hired employees of **[Vendor or Contractor]** through the E-Verify Program ("Program"). **[Vendor or Contractor]** is not required to verify the work eligibility status of all newly hired employees through the Program if the Program no longer exists.

b. **[Vendor or Contractor]** and its subcontractors shall not knowingly employ or contract with an unauthorized alien or retain an employee or contract with a person that **[Vendor or Contractor]** or its subcontractors subsequently learns is an unauthorized alien. If **[Vendor or Contractor]** violates this Section 7(b), the [City or City body which is a party to the contract] shall require **[Vendor or Contractor]** to remedy the violation not later than thirty (30) days after the [City or City body which is a party to the contract] notifies **[Vendor or Contractor]**. If **[Vendor or Contractor]** fails to remedy the violation within the thirty (30) day period, the [City or City body which is a party to the contract] shall terminate the contract for breach of contract. If the [City or City body which is a party to the contract] terminates the contract, **[Vendor or Contractor]** shall, in addition to any other contractual remedies, be liable to the [City or City body which is a party to the contract] for actual damages. There is a rebuttable presumption that **[Vendor or Contractor]** did not knowingly employ an unauthorized alien if **[Vendor or Contractor]** verified the work eligibility status of the employee through the Program.

c. If **[Vendor or Contractor]** employs or contracts with an unauthorized alien but the [City or City body which is a party to the contract] determines that terminating the contract would be detrimental to the public interest or public property, the [City or City body which is a party to the contract] may allow the contract to remain in effect until the [City or City body which is a party to the contract] procures a new contractor.

d. **[Vendor or Contractor]** shall, prior to performing any work, require each subcontractor to certify to **[Vendor or Contractor]** that the subcontractor does not knowingly employ or contract with an unauthorized alien and has enrolled in the Program. **[Vendor or Contractor]** shall maintain on file a certification from each subcontractor throughout the duration of the Project. If **[Vendor or Contractor]** determines that a subcontractor is in violation of this Section 7(d), **[Vendor or Contractor]** may terminate its contract with the subcontractor for such violation. Such termination may not be considered a breach of contract by **[Vendor or Contractor]** or the subcontractor.

e. By its signature below, **[Vendor or Contractor]** swears or affirms that it i) has enrolled and is participating in the E-Verify program, ii) has provided documentation to the [City or City body which is a party to the contract] that it has enrolled and is participating in the E-Verify program, and iii) does not knowingly employ an unauthorized alien.

4. Non-Discrimination

[Vendor or Contractor] agrees:

(a) That in the hiring of employees for the performance of work under this contract or any subcontract hereunder, no contractor, or subcontractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, religion, color, sex, national origin or ancestry, discriminate against any citizen of the State of Indiana who is qualified and available to perform the work to which the employment relates;

(b) That no contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, religion, color, sex, national origin or ancestry;

(c) That the[City or City body which is a party to the contract] may deduct from the amount payable to the contractor a penalty of five dollars ($5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of the contract;

(d) If there is a second or any subsequent violation of the terms or conditions of this section, then this contract may be cancelled or terminated by [City or City body which is a party to the contract]and all money due or to become due hereunder will be forfeited.

Bidder Complies	
Yes	No

CITY OF WEST LAFAYETTE
NON-COLLUSION AFFIRMATION

STATE OF INDIANA

COUNTY OF: _____} SS:

The undersigned offeror or agent, duly swears, under penalties for perjury, that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be offered by any person nor to prevent any person from making an offer nor to induce anyone to refrain from making an offer and that this offer is made without reference to any other offer.

_____
Offeror (Firm)

_____
Signature of Offeror or Agent

Before me, a Notary Public in and for said County and State personally appeared,

_____, who acknowledged the truth of the

statements in the foregoing affirmation on this _____day of _____, 20 ___.

My Commission Expires:

_____

_____
(written) Notary Public

_____
(printed)

County of Residence: _____

Bidder Complies	
Yes	No

NOTICE TO BIDDERS

Notice is hereby given that the Redevelopment Commission of the City of West Lafayette, Indiana will receive sealed bids until the hour of 8:30 a.m. (local time) on August 20, 2014 at the Office of the Clerk-Treasurer, Police Department, 711 W Navajo St. West Lafayette, IN 47906 for one 2014 or newer 750-1000 Gallon Pumper with CAFS, as per specifications. After said time, all bids will be taken to Morton Center, and there will be publically opened and read aloud. Bids received after said time will be returned unopened. No oral, telegraph, facsimile, or telephone bids or changes to bids will be considered.

Specifications and bid packet forms are available on the City website at www.westlafayette.in.gov, at the West Lafayette Fire Department, Station #1, 300 North St. West Lafayette, IN 47906 phone, 765-775-5176, or at the Office of the Clerk Treasurer at the Police Dept. 711 W Navajo St. West Lafayette, IN 47906.

Each bidder will submit their bid upon forms provided in the bid packet and enclosed in a sealed envelope marked, Fire Apparatus Bid.

The Redevelopment Commission expressly reserves the right to reject any or all bids and waive irregularities of bidding.

GENERAL INFORMATION

It is the intent of these specifications to secure apparatus constructed to withstand the severe and continuous use encountered during emergency fire fighting services. The apparatus must be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

These specifications detail the requirements for general design criteria of cab and chassis components, fire pump and related components, water tank, fire body, electrical components, painting, and equipment. In evaluating the bid proposals to determine which proposal is the most advantageous, these major items shall be considered.

Apparatus and equipment must meet the specific requirements and intent of the requirements as specified herein. All items of these specifications shall conform to the character of the proposed apparatus and the purpose for which it is intended. Criteria as specified by the National Fire Protection Association Pamphlet No. 1901, latest edition, entitled "Suggested Specifications for Motor Fire Apparatus", as approved by the American Insurance Association and International Association of Fire Chiefs, are hereby adopted and made a part of these specifications the same as if they were written out in full, insofar as they apply and are not specifically modified in the following detailed specifications. Each bidder shall provide only that equipment as required in the following specifications.

The fire apparatus and equipment to be furnished in meeting these specifications must be the products of an established, reputable fire apparatus and/or equipment manufacturer. Each bidder shall furnish satisfactory evidence of the manufacturer's ability to construct, supply service parts and technical assistance for the apparatus specified. Each bidder must state the location of the factory and location for post delivery service.

BID COMPLIANCE INSTRUCTIONS

Each bidder must indicate his compliance with these specifications by marking "YES" or "NO" in the appropriate column for each individual paragraph of this specification. Indicating "YES" to a paragraph shall mean full compliance; indicating "NO" shall mean an exception is being taken. Any deviation from the specification, no matter how small, must be so annotated. All exceptions must be fully explained on a separate page, titled "Exceptions", giving reference to the page and paragraph where the exception is being taken. Failure to comply with this requirement shall result in the bid proposal being rejected.

The West Lafayette FD shall be the sole arbiter as to what exceptions may be allowed or disallowed. In the event a bidder fails to make any indication of compliance for any or all provisions it

Bidder Complies	
Yes	No

will be assumed that the bidder is taking total exception to the specification and the bid shall be disallowed.

****DEDUCTIONS****

Include in bid, a deduction price table of these items priced separately as a possibility of deducting from the bid price and include any labor that was figured with each item from the bid.

- Rear Camera System
- Elkhart Stinger Deck Gun, Unit only, still include the piping and mounts
- PPV Fan (SuperVac)
- TFT Nozzles
- Rescue 42 Struts

FIRE APPARATUS DOCUMENTATION

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

The manufacturer's record of apparatus construction details, including the following information:

- Owners name and address
- Apparatus manufacturer, model and serial number
- Chassis make, model and serial number
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water and manufacturer mounted equipment, front and rear
- Engine make, model, serial number, rated horsepower, rated speed and governed speed
- Type of fuels and fuel tank capacity
- Electrical system voltage and alternator output in amps.
- Battery make, model and total capacity in cold crank amps (CCA)
- Transmission make, model and serial number. If so equipped chassis transmission PTO(s) make, model and gear ratio
- Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Pump transmission make, model, serial number and gear ratio
- Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Water tank certified capacity in gallons or liters
- Paint manufacturer and paint number(s)
- Company name and signature of responsible company representative
- Certification of slip resistance of all stepping, standing and walking surfaces.

If the apparatus has a fire pump, the pump manufacturer's certification of suction capability.

If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications.

If the apparatus has a fire pump, the engine manufacturers certified brake horsepower curve for the engine furnished, showing the maximum governed speed.

Bidder Complies	
Yes	No

If the apparatus has a fire pump, the pump manufacturer's certification of hydrostatic test.

If the apparatus has a fire pump, the Underwriters Laboratory certification of inspection and test for the fire pump.

If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source.

Weight documents from certified scale - showing actual loading on the front axle, rear axle(s) and overall vehicle (with the water tank full but without personnel, equipment and hose) shall be supplied with the complete vehicle to determine compliance with NFPA-1901.

Written load analysis and results of electrical performance tests.

If the apparatus is equipped with a water tank, the certification of water tank capacity by the tank manufacturer.

The chassis shall be certified by the apparatus manufacturer as conforming to all applicable Federal Motor Vehicle Safety Standards in effect at the date of contract. This shall be attested to by the attachment of a FMVSS certification label on the vehicle by the contractor who shall be recognized as the responsible final manufacturer.

VEHICLE RECORDS

The successful bidder shall be responsible for preparing and maintaining a record file of parts and assemblies used to manufacture the apparatus. These records shall be maintained in the factory of the bidder for a minimum of twenty (20) years. File shall contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus, and original purchase documents including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents. The West Lafayette FD shall have access to any and all documents contained in this file upon official written request.

BIDDER INSTRUCTIONS

Bids shall be addressed and submitted in accordance with the advertised "Bid Notice". The words "Fire Apparatus Pumper with CAFS", the date, and the bid opening time must be stated on the face of the bid envelope. It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, telegram, facsimile or telephones bids shall not be considered.

Each bid shall be accompanied by a detailed description of the apparatus and equipment it proposes to furnish. It is the intent of these specifications to cover the furnishing and delivery of a complete and soundly engineered apparatus equipped as specified. Minor details of construction and materials, where not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

Brand names or model numbers have been specified for some items. These have been carefully selected because of their reliability and availability for replacement locally. In order to be most responsive, items named, or an item "equal to" the particular item specified by brand name or model, should be contained in the bid proposal. It is the bidder's responsibility to prove to the West Lafayette FD that an item bid as "equal to" a particular specified item, is truly of equal quality, design, and function. The West Lafayette FD maintains the right to make a final decision as to the acceptability of an item bid as "equal to" a particular specified item.

No exception shall be allowed for any of the aforementioned instructions. Bids not submitted in accordance with these instructions shall be rejected.

"TOP OF THE LINE" CHASSIS

Bidders shall propose a custom built chassis, which is "Top of the Line" including the cab, electrical system and drive train. NO EXCEPTIONS!

TIMELY PROPOSALS

It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, facsimiles, telegrams, or telephone bids shall not be considered.

GENERAL CONSTRUCTION

The complete apparatus, assemblies, subassemblies, component parts, etc., shall be designed and constructed with the due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subject. All parts of the apparatus shall be designed with a factor of safety, which is equal to or greater than that which is considered standard and acceptable for this class of equipment in fire fighting service. All parts of the apparatus shall be strong enough to withstand general service under full load. The apparatus shall be so designed that the various parts and readily accessible for lubrication, inspection, adjustment and repair. Bidder's specifications must meet minimum requirements of N.F.P.A. Pamphlet #1901; Underwriters Laboratories, Inc.; and all State and Federal Department of Transportation vehicle regulations at time of sale of unit.

The apparatus shall be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between front and rear axles that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters shall be carried without overloading or injuring the apparatus.

PRODUCT LIABILITY INSURANCE

Each bidder shall supply proof of product liability and facility insurance equal to or exceeding $25,000,000.00. This shall be provided as part of the proposal.

SINGLE-LINE RESPONSIBILITY

Since the West Lafayette FD desires to eliminate divided responsibility on the part of the manufacturers, only manufacturers who build their own fire apparatus cab, chassis, and body shall be considered. The apparatus must be built and painted in a facility/facilities owned and operated by the bidder by a staff that is directly employed by the bidder. At least fifteen similar units must have been sold and delivered of the type described herein. The entire apparatus (to include cab, chassis, body, pump, water tank and aerial device) MUST be manufactured in the United States! NO EXCEPTION SHALL BE ALLOWED TO THIS REQUIREMENT!

The bidder shall state if single line responsibility is being proposed.

Yes/No: _____

ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the specifications or other contract documents shall be made to any Bidder verbally. Every request for such interpretation shall be in writing and addressed to the Purchaser, and must be received at least ten days prior to the date fixed for the opening of the bids to be given consideration. Any and all such interpretations and any supplemental instructions shall be in the form of written addenda to the specifications which, if issued, shall be mailed by certified mail to all prospective Bidders not later than five days prior to the date fixed for the opening of bids. Failure of any Bidder to receive any such addendum or interpretation shall not relieve any Bidder from any obligation under his bid as submitted. All addenda so issued become a part of the contract documents.

PAINT PERFORMANCE CERTIFICATION

The finish paint shall be certified by the apparatus manufacturer as conforming to all applicable Commercial Vehicle Paint Standards in effect at the date of contract. This shall be attested to by the attachment of a PPG certification.

SPECIAL CONDITIONS

No bid shall be considered unless the bidder can meet the special conditions stated herein.

The complete apparatus must be manufactured in the United States of America.

PRICES AND PAYMENTS

The bid price shall be F.O.B. Destination, on a delivered and accepted basis at the Fire Department.

Total price on bidder's proposal sheet must include all items listed in these specifications. Listing any items contained in the specification as an extra cost item, unless specifically requested to do so in these specifications, shall automatically be cause for rejection.

Bidders may offer pre-payment discounts options if available, otherwise payment upon delivery.

Bidder shall compute pricing less federal and state taxes. It is understood that any applicable taxes shall be added to the proposed prices, unless the purchaser furnishes appropriate tax-exempt forms.

BID EVALUATION

Purchaser, Fire Chief and Purchasing Agent shall evaluate bids received. This evaluation shall be based as a minimum on the following criteria:

- Commitment for expedient delivery.
- Commitment to the general conditions contained herein, including warranty.
- Completeness of the proposal, i.e. the degree that it responds to all requirements and requests for information contained herein.
- Layout and specifications of cab design.
- Layout and sizing of body compartments and hosebed area.
- Manufacturing and delivery schedule.
- Contractor's demonstrated capabilities and qualifications.
- Equipment suppliers and/or local representative's demonstrated capabilities and qualifications.

Bidder Complies	
Yes	No

EXCEPTIONS TO SPECIFICATIONS

Exceptions shall be referenced to the paragraph and page of these specifications where the item appears. Drawings, photographs, and technical information about the exception shall be included as necessary. Any exceptions may be considered during the evaluation process, and the decision shall be final.

Proposals taking total exceptions to specifications shall not be accepted.

"OR APPROVED EQUAL" CLAUSE

The mention in the specifications of apparatus, equipment or material by brand name or by such specified description of same as is hereby made, is intended to convey to the bidder's understanding, the degree of excellence required. Any article, equipment, or material ,which shall conform to the standards and excellence so established, and is of equal merit, strength, durability and appearance to perform the desired function, is deemed eligible for offer as a substitute. The qualifications of the offering shall be judged as to their conformance with these specifications. Any equipment offered other than herein specified shall be subject to a competitive demonstration and evaluation shall be subject to a competitive demonstration and evaluation by the using department. Such demonstration to be provided on request within ten working days after the receipt of bids.

The result of that demonstration and evaluation shall be of prime importance in the recommendation to the governing body for the final contract award.

TECHNICAL INFORMATION

Bidder shall furnish free of charge, upon request, technical information, graphs, charts, photographs, engineering diagrams, steering geometry, drive train certifications, instruction guides, or other documentation as requested to show that the equipment offered fully complies with these specifications.

PROPRIETARY PARTS

It is the intention of the Purchaser for all bidder's to furnish the apparatus with major parts commonly used by the heavy-duty truck manufacturers and open market vendors where as replacement parts are more readily available and at reduced cost. The use of proprietary parts such as but not limited to axles, suspensions, engines, transmissions, frontal air bags, electronic controls, multiplexing systems, seats, pumps, gauges, foam systems, etc., may not be acceptable by the purchaser.

DELIVERY TIME

Each bidder shall state the completed apparatus delivery time based on the number of calendar days, starting from the date the sales contract is signed and accepted by the apparatus manufacturer.

The West Lafayette Fire Dept. is looking for 210 day build time from date of contract signed.

Delivery Time: _____ Calendar days, if 210 day build cannot be made.

If the agreed completion date is not met, then the bidder will have a penalty of $100 a calendar day for everyday past the agreed build time.

Bidder Complies	
Yes	No

BOND REQUIREMENTS

Any bonds or sureties (bid, performance, or other) required by the Purchasing Organization shall be as specified below or as requested in the advertised "Bid Notice".

A bid bond shall be submitted with the bidder's proposal. The bond shall be for an amount equal to 10% of the proposed bid price. Failure to provide an original, acceptable, valid bid bond with the proposal shall result in the immediate rejection of the bidder's proposal.

The apparatus manufacturer must provide all bonds; bonds provided by a sales representative, dealer, distributor, or agent of the apparatus manufacturer are not acceptable.

With respect to the qualifications of proposed bonds or sureties, the bidder's bonding company must meet the following requirements:

- An acceptable surety as outlined by the department of treasury on their most recent federal register at a limit of at least $10,000,000;
- A.M. Best rating of "A" or better with a financial rating of at least "VIII"; and licensed as a surety in the state where the sale is to be made.

PERFORMANCE BOND

A performance bond shall be supplied by the successful bidder upon acceptance of the signed sales contract for the apparatus. The performance bond shall be for an amount equal to the full contract price (i.e. 100% bond).

FAIR, ETHICAL AND LEGAL COMPETITION

In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

NON-COLLUSIVE BIDDING CERTIFICATION

By submission of this bid, each bidder and each person signing on behalf of any bidder, certifies, and in the case of a joint bid, each party thereof certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief:

- The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for purpose of restricting competition, as to any matter relating to sale price with any other bidder or any competitor.
- Unless otherwise required by law, the prices that have been quoted in this bid have not been knowingly disclosed by the bidder and shall not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.
- No attempt has been made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition.
- That all requirements of the law including amendatory provisions as to non-collusive bidding have been complied with.

USER'S LIST

Each bidder shall include a current "User's List" with a minimum of five (5) units that are within 250 miles of the purchaser. This list shall include customer name, person to contact, address and telephone number. Failure to include this list shall result in rejection of the bid.

Bidder Complies	
Yes	No

MATERIAL AND WORKMANSHIP

All equipment furnished shall be guaranteed to be new and of current manufacture, to meet all requirements of these specifications.

All workmanship shall be of high quality and accomplished in a professional manner so as to insure a functional apparatus with a pleasing, aesthetic appearance.

****TRADE IN OF CURRENT APPARATUS****

Bid proposal must include an offer to trade West Lafayette Fire Dept. current Apparatus as a possible trade with a value of said Apparatus as a deduction from Bid total.

Current Apparatus
1999 Pierce Quantum
Job #10468 10/7/1999
VIN #4P1CT02EXXA001682
PUMP: WATEROUS, MODEL CSU, SER#46536W
PUMP TRANSMISSION: MODEL YCX, SER#46537T
1500 GPM
6 KW HYD. GENERATOR
COMPLETE ALUM. HOSE BED COVER DOORS
INLINE FOAM EDUCTION SYSTEM
WARD DIESEL NO SMOKE EXHAUST FILTER SYSTEM
ENGINE HRS @2669
MILES @ 49,335
New remanufactured Allison Transmission, 2013
New radiator, 2013
New brakes, 2013
Currently station at Station 2, 531 W. Navajo West Lafayette, IN 47906
Currently in service,

CONTRACT AWARD

The Purchaser reserves the right to reject any or all bids deemed to be unresponsive. The Purchaser also reserves the right to waive any informalities, irregularities and technicalities in procedure.

The Purchaser reserves the right, before awarding the contract, to require a bidder to submit evidence of his qualifications as may be deemed necessary. Documentation, which may be required, is financial soundness, technical competency, and other pertinent qualifications of a bidder, including past performance (experience) with the Purchaser.

Upon award of contract, the sales contract shall be between the Purchaser and the manufacturer of the apparatus. Contracts between the Purchaser and a sales representative, dealer, distributor, or agent of the apparatus manufacturer shall not be acceptable. (No Exceptions.)

Bidder Complies	
Yes	No

APPROVAL DRAWING

A detailed drawing of the apparatus shall be provided to the purchaser for approval before construction begins. A copy of this drawing shall also be provided to the manufacturer's representative. Upon purchaser's approval, the finalized drawing shall become a part of the total contract.

The drawing shall show, but is not limited to, such items as the chassis make and model, major components, location of lights, sirens, all compartment locations and dimensions, special suctions, discharges, etc. The drawing shall be a visual interpretation of the apparatus as it is to be supplied.

INSPECTION VISITS

The successful bidder shall provide three (3) factory inspection trips to the apparatus manufacturer's facility. Transportation, meals, lodging, and other requisite expenses shall be the bidder's responsibility.

Accommodations shall be for up to five (5) Fire Department representatives per trip.

The factory visits shall occur at the following stages of production of the apparatus:

- Pre-construction / blueprint review. (up to 5 Fire Dept. representatives)
- Pre-paint inspection if needed by Fire Dept. (up to 3 Fire Dept. representatives)
- Final inspection upon completion. (up to 5 Fire Dept. representatives)

Travel arrangements more than 700 miles from the manufacturing facility shall be via commercial airline transportation.

The West Lafayette FD maintains the right to inspect the apparatus, within normal business hours, at any other point during construction. Expenses incurred during non-specified inspection visits shall be the responsibility of the West Lafayette FD.

During inspection visits, the West Lafayette FD reserves the right to conduct actual performance tests to evaluate completed portions of the unit. Testing shall be accomplished with the assistance and resources of the contractor.

DELIVERY, DELIVERY ENGINEER, AND TESTING

Delivery of the apparatus to the West Lafayette FD shall remain the bidder's responsibility.

On initial delivery of the fire apparatus, a qualified and responsible representative of the contractor shall demonstrate the apparatus and provide initial instruction to representatives of the customer regarding the operation, care, and maintenance of the apparatus and equipment supplied.

INSTRUCTION MANUALS/DRAWINGS, SCHEMATIC

In accordance with standard commercial practices, applicable to each vehicle (including body and special equipment) furnished under the contract, the following listed manuals and schematics, in the quantity specified, shall be provided at time of delivery of each vehicle.

The contractor shall supply at time of delivery, two (2) CD copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

Bidder Complies	
Yes	No

The manual shall contain the following:

- Descriptions, specifications, and ratings of chassis, pump (if applicable), and aerial device.
- Wiring diagrams.
- Lubrication charts.
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

VEHICLE FLUIDS PLATE

As required by NFPA-1901, the contractor shall affix a permanent plate in the driver's compartment specifying the quantity and type of the following fluids used in the vehicle:

A permanent plate in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid
- Drive axle(s) lubrication fluid
- Air-conditioning refrigerant
- Air-conditioning lubrication oil
- Power steering fluid
- Cab tilt mechanism
- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Aerial systems

PRE-DELIVERY SERVICE

After transportation from the factory and immediately prior to delivery to the fire department, the apparatus shall receive a pre-delivery service consisting of: engine oil & filter change, chassis lubrication, fuel filter(s) changed, adjustment of engine to manufacturers specifications, complete inspection including all electrical and mechanical devices, for proper operation and correction of leaks or obvious problems.

BIDDERS BACKGROUND

All bidders shall state the ownership of the organization which shall actually construct the apparatus. Companies which are a division, subsidiary, wholly or partially owned subsidiary or other entity which is wholly or partially owned or controlled by another entity shall state their entire ownership lineage. Bidders from such organizations must have the bid signed by the chief executive of the parent entity.

Bidder Complies	
Yes	No

REQUIRED PROPOSAL BLUEPRINT

A scale drawing of the specific apparatus being proposed shall be submitted WITH THE BID. Drawings of similar units or demo units shall not be permitted. Bidders should be clear that this provision is requiring a SCALE drawing of the truck which is actually being bid. The drawing shall be done at the manufacturer's facility by the manufacturer's engineering department in order to guarantee the accuracy of the drawing. Failure to comply with this requirement shall be grounds for rejection of the bid!

FAMA COMPLIANCE

The apparatus manufacturer must be a current member of the Fire Apparatus Manufacturer's Association (FAMA).

U.S.A. MANUFACTURER

The entire apparatus shall be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service.

TABLE OF CONTENTS

As all manufacturers present their specifications in a different order, each manufacturer shall provide a table of contents for ease of bid comparison and to clearly locate all proposed items.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti-slip standards. Aluminum/stainless steel tread plate utilized for stepping, standing, and walking surfaces shall be No-Slip type. Upon request by the purchaser, the manufacturer shall supply proof of compliance with this requirement. All vertical surfaces on the body, which incorporate aluminum/stainless steel tread plate material, will utilize the same material pattern to provide a consistent overall appearance.

MAXIMUM OVERALL HEIGHT

Due to overall height limitations, the maximum overall height of the vehicle shall be documented as 126-inches (10-feet 06-inches), NO EXCEPTIONS.

COOPERATIVE PURCHASING

The Manufacturer shall be pleased to allow other public agencies to use the purchase agreement resulting from this invitation to bid unless the bidder expressly notes on the proposal form that prices are not available for tag-on. The condition of such use by other agencies shall be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with the successful bidder. Such tag-ons shall be done so that the original purchasing agency has no responsibility for performance by either the manufacturer or the agency using the contract.

UNDERWRITERS LABORATORIES INC. (UL) EXAMINATION AND TEST PROPOSAL

If required by the specific chapters of NFPA-1901, the proposed unit shall be tested and certified by Underwriters Laboratories Inc. (UL) Underwriters Laboratories Inc. (UL) is recognized worldwide as a leading third party product safety certification organization for over 100 years. UL has served on National Fire Protection Association (NFPA) technical committees for over thirty years.

Bidder Complies	
Yes	No

INDEPENDENT TESTING ORGANIZATION QUALIFICATIONS

- UL is a nationally recognized testing laboratory recognized by OSHA.
- UL complies with the American Society for Testing and Materials (ASTM) Standard ASTM E543 "Determining the Qualifications for Nondestructive Testing Agencies."
- UL has more than 40 years of automotive fire apparatus safety testing experience and 16 years of factory aerial device testing and Certification experience. UL has more than 100 years of experience developing and implementing product safety standards.
- UL does not represent, is not associated with, nor is in the manufacture or repair of automotive fire apparatus.
- All test work for fire pumps outlined in NFPA 1901, Edition shall be conducted.
- UL has included a list of all factory aerial device manufacturers for whom testing is currently being conducted on a regular basis.
- UL carries ten million dollars in excess liability insurance for bodily injury and properly damage combined.

UL provides the manufacturer a complete written examination and test report for each inspection performed at the manufacturer's facility. This report specifies the points of inspection and results of such examinations and tests.

The UL inspectors performing the test work on the units are certified to Level II in the required NDT methods, under the requirements outlined in ASNT document CP-189.

The actual person(s) performing the inspection shall present for review proof of Level II Certification in the required NDT methods.

The apparatus manufacturer shall designate, in writing, who is qualified to witness and certify these test results.

Prior to submittal to the automotive fire apparatus manufacturer, the final Report shall be reviewed by the Supervisor of Fire Equipment Services and a Registered Professional Engineer, both of whom are directly involved with the aerial device certification program at UL.

When the unit successfully meets all the requirements outlined in NFPA 1901, 2009 Edition, UL shall issue a Certificate of Automotive Fire Apparatus Examination and Test stating the unit's compliance with NFPA- 1901.

GENERAL APPARATUS DESCRIPTION "PUMPER"

The unit shall be designed to conform fully to the "Pumper Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2009 Revision), which shall include the following required chapters as stated in this revision:

- Chapter 1 Administration
- Chapter 2 Referenced Publications
- Chapter 3 Definitions
- Chapter 4 General Requirements
- Chapter 5 Pumper Fire Apparatus
- Chapter 12 Chassis and Vehicle Components
- Chapter 13 Low Voltage Electrical Systems and Warning Devices
- Chapter 14 Driving and Crew Areas
- Chapter 15 Body, Compartments and Equipment Mounting
- Chapter 16 Fire Pumps and Associated Equipment
- Chapter 18 Water Tanks

Bidder Complies	
Yes	No

CAB SAFETY SIGNS

The following safety signs shall be provided in the cab:

- A label displaying the maximum number of personnel the vehicle is designed to carry shall be visible to the driver.
- "Occupants will be seated and belted when apparatus is in motion" signs shall be visible from each seat.
- "Do Not Move Apparatus When Light Is On" sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).
- A label displaying the height, length, and GVWR of the vehicle shall be visible to driver.
- This label shall indicate that the fire department will revise the dimension if vehicle height changes while vehicle is in service.

CHASSIS DATA LABELS

The following information shall be on labels affixed to the vehicle:

Fluid Data

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer Fluid (if applicable)
- Drive Axle(s) Lubrication Fluid
- Air Conditioning Refrigerant
- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Cab Tilt Mechanism Fluid
- Transfer Case Fluid (if applicable)
- Air Compressor System Lubricant
- Generator System Lubricant (if applicable)
- Front Tire Cold Pressure
- Rear Tire Cold Pressure
- Maximum Tire Speed Rating

Chassis Data

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Manufacturers weight certification:

- Gross Vehicle (or Combination) Weight Rating (GVWR or GCWR)
- Gross Axle Weight Rating, Front
- Gross Axle Weight Rating, Rear

ROLLOVER STABILITY

The apparatus shall meet the criteria defined in 4.13.1 for rollover stability as defined in the 2009 NFPA Standard for Automotive Fire Apparatus.

SEAT BELT ANCHOR TESTING

Each seat belt anchor shall be tested to withstand 3,000lbs of pull on both the lap and shoulder belt in accordance with FMVSS 210 section 4.2.

SEAT MOUNTING TESTING

Each seat mounting position shall be tested to withstand 20G's of force in accordance with FMVSS 207 section 4.2(c).

Both tests shall be performed and verified at a third party testing and evaluation center.

****** CAB AND CHASSIS 2014 or NEWER******

CAB TYPE

- **FULL TILT**

The cab shall be a custom tilt style, built specifically for fire service. The cab shall be a cab over engine design, with integral tilt mechanism and engine access from inside the cab.

Cab shall be designed, fabricated, assembled in its entirety, and installed on the frame rails in the manufacturer's factory. This requirement will eliminate any split responsibility in warranty and service.

OPEN SPACE DESIGN

The cab interior shall be the "Open-Space" design with no wall, window or vertical support posts between the front and rear crew areas to allow direct communication, better visibility and air circulation in the cab.

CAB MATERIAL – ALUMINUM/STAINLESS STEEL

The cab shall be fabricated from aluminum alloy/stainless steel, no steel or Poly.

CAB - BASE CONSTRUCTION

Cab sub-frame shall be of structural aluminum or stainless steel. This frame shall extend the full length and width of the cab and be secured to the chassis frame through two (2) rear urethane self-centering load cushions, two (2) forward pivot brackets, and two (2) cab locks.

The front cab wall shall be of double wall type construction, featuring an inner and outer panel.

The width of cab body to be no less than 96” and no more than 100” width.

CRASH TESTING CERTIFICATION

To ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided. The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

Furthermore, proof of testing and certification shall be provided that the cab, in accordance to SAE J2420 was front impact tested at 2.1 times the standard energy required in SAE J2420, thus exceeding the NFPA requirement.

This test shall be performed with no support immediately behind the cab, thus providing an authentic test result.

Bidder Complies	
Yes	No

ROOF AND SIDE LOAD TESTING

The cab design will include additional third party testing to ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided. The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

The manufacturer shall provide proof that third party testing has been conducted to prove a static roof and a static side-load test has been completed.

These tests will be conducted per the SAE J2422, Cab Roof Strength Evaluation, protocol and the ECE R29, Uniform provisions concerning the approval of vehicles with regard to the protection of occupants of the cab of a commercial vehicle, protocol.

During both tests, the cab will withstand these loads without encroachment into the occupant survivable space and all doors remained closed during the test. The tests will be documented with photographs and real-time video in a report provided to the manufacturer.

DIMENSIONS - FOUR DOOR STYLE CAB

Include Cab Dimensions:

- Overall width _____
- Inside width across ceiling _____
- Front area floor to ceiling _____
- Top of front seat to ceiling _____
- Seat back to steering wheel _____
- Inside width (door to engine enclosure) _____
- Inside width (door to engine enclosure) _____
- Crew seat area width _____
- Outer crew seat risers to rear wall _____
- Centerline front axle to back of cab _____
- Floor to top of engine enclosure _____
- Centerline axle to front of cab _____

Cab Entry Door Width Dimensions

- Forward door opening _____
- Rear door opening _____

Cab Entry Step Dimensions

- Forward door recessed step _____
- Rear door recessed step _____

CAB ROOF

The roof will be of a split level design, streamline appearance. The roof shall be constructed the same material as the main structure and shall be internally reinforced using framing which shall span the entire width and length of the cab for maximum structural integrity. This shall allow the roof to support personnel and roof mounted equipment without the need for additional reinforcement.

The cab roof over the rear crew area shall be raised higher than the front driver and officer area. The front face of the raised roof section shall be sloped, creating a streamlined interface with the standard, lower, forward roof section. This design shall allow for additional interior height in the rear crew area.

The height of the cab will be as tall as can be without going over the 10'6" limit.

Approximate dimensions:

- Crew area floor to ceiling _____
- Top of crew seat to ceiling _____

CAB ROOF DRIP RAIL

For enhanced protection from inclement weather, an integral drip rail shall be furnished on each side of the cab roof. The drip rail shall extend the full length of the cab roof.

LOCKING CAB DOORS

Each exterior cab door shall be equipped with keyed locks. The cab doors shall be capable of being locked from the outside with a key and from the inside with a control in each interior paddle latch.

ELECTRIC WINDOWS

Each side cab door shall have a tinted retractable window.

Both front cab doors shall be equipped with electrically operated windows.

The driver shall have a control to operate the officer's side window in a panel located on the dash. The officer side window control shall be in a panel on the dash.

Each crew cab door shall have a retractable window operated by a hand crank mechanism.

INNER DOOR PANELS

The cab door interior panels shall be covered with a one piece, full height, aluminum / stainless steel panel for ease of maintenance. The panel shall be shall be designed to allow easy access to the inner door.

Each interior cab door panel shall be equipped with a "STOP" sign type decal. The decals shall be made from Scotchlite material and shall cover at least 96 in². The decal shall be octagonal and shall be 10" in size.

Bidder Complies	
Yes	No

WINDSHIELD WIPERS AND WASHER

Dual, electric operated, windshield wipers shall be provided. One (1) electric drive motor shall be provided for each wiper.

Wipers shall have "HI/LO" and "INTERMITTENT" operating speeds. "HI/LO" speeds shall be controlled by a switch, "INTERMITTENT" operation shall be controlled by a switch. The wipers shall be of the self-parking type.

Windshield washers shall be electric operated wet-arm type with a washer fluid reservoir, mounted inside the engine enclosure and readily accessible. The washer control shall be integral with the intermittent wiper control switch.

There shall be individual removable panels on the front face of the cab for access to the wiper motor assemblies.

DARK TINTED REAR WINDOW GLASS

The windshield and the forward cab door glass shall be provided with standard DOT green automotive tint. The side cab windows to the rear of the front doors, the rear cab door windows and any rear viewing windows shall be equipped with a dark automotive tint.

GRAB HANDLES

Four (4), knurled, bright anodized aluminum handrails shall be provided, one (1) at each cab door entrance. Grab rail stanchions shall be chrome plated and offset when necessary to prevent "hand-pinching" when opening or closing the doors. Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

AIR INTAKE/OUTLET

Two (2) bright finished, custom formed air inlets/outlets shall be provided horizontally above the wheel well opening, one on each side of the cab. The grille shall be designed with an aesthetic look with horizontal louvers that will be equipped with a mesh screen to serve as a secondary ember separator. The side intakes shall be bolstered a minimum of 1” from the skin of the cab face. The design shall permit proper ducting of air through the engine compartment and cooling system.

ENGINE AIR INTAKE SYSTEM

The side inlet, used for the air intake to the air cleaner, shall be equipped with dual ember separators for separating burning embers from the air intake system. This system shall be such that particles larger than .039 inches (1 mm) in diameter cannot reach the air filter element.

No part of the air intake system for the engine shall be lower than the top of the frame rails to ensure the vehicle can navigate pooled water without any part of the air intake system being exposed to water when the vehicle is stopped or in motion. Chassis designs, which the engine air intake system is lower than the frame rails shall not be acceptable!

WHEEL WELL LINERS

The front cab wheel wells shall be equipped with fully removable, bolt-in, inner wheel well liners. The liners shall extend full depth into the truck frame. The completely washable wheel well liners shall be designed to protect the cab substructure, inner panels, and other miscellaneous installed components from road salts, debris, dirt accumulation and corrosion.

Bidder Complies	
Yes	No

FENDERETTES

The cab wheel well openings shall be trimmed with replaceable, bolt-in, polished aluminum/stainless steel fenderettes. The fenderettes shall be secured to the cab with stainless steel or equivalent threaded fasteners along the internal perimeter of the wheel well. Dissimilar metal tape and black vinyl trim molding shall be used where the cab and fender meet.

FRONT MUD FLAPS

Heavy duty, black rubber type mud flaps shall be provided behind the front wheels.

MIRRORS

Two (2) mirrors shall be furnished, one on each front side of cab. Both heads will be electrically heated and controlled and have a convex mirror.

Mirrors to be designed for minimal vibration while engine is idling! Strong arm less vibration.

Both heads will be electrically heated, controlled by one (1) switch on the dash convenient to the driver. Both mirror heads will be controlled from the driver's seating position by one (1) four way switch that allows the driver to select either the officer side mirror or the driver side mirror.

INTERIOR REAR WALL

The interior rear wall of the cab shall be covered with vinyl for durability and shall match the other areas of the cab. Each side will have Performance Advantage Fastlok boards mounted for placement of tools from the Fire Dept.

UNDER SEAT STORAGE COMPARTMENTS

There shall be a compartment provided under each front seat. Each compartment shall be accessible from the front of the seat riser when the door is opened.

ENGINE ENCLOSURE

A hinged access door shall be provided in the top rearward portion of the engine enclosure. The door shall allow access to the engine oil, transmission fluid, power steering fluid level dipsticks and or the windshield washer fluid tank. The access door shall be provided with two (2) flush mounted latches and gas shock holders. There shall be an ABS plastic cover over the access door to give a cleaner look to the top of the engine enclosure and doghouse area.

SUN VISORS

To provide maximum protection for the driver and officer, two (2) dark polycarbonate sun visors shall be mounted in the cab overhead on each side.

******* CAB SEATING & ACCESSORIES *******

DRIVERS SEAT

The driver's seat shall be a H. O. Bostrom air suspension, high back bucket seat. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall have a five inch fore and aft adjustment, a three inch height adjustment with a reclining seat back. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

Bidder Complies	
Yes	No

OFFICERS SEAT

The officer's seat shall be a H. O. Bostrom series fixed base SCBA seat. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall include a SCBA storage area with integral headrest.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The officer's seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

REAR FACING, OUTBOARD, OFFICER SIDE SEAT

The Officer’s side outboard rear facing crew seat shall be a H. O. Bostrom fixed base SCBA seat. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall include a SCBA storage area with integral headrest.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The officer’s side rear facing outboard seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

DELETE REAR FACING, OUTBOARD, DRIVER SIDE SEAT

There shall not be a crew seat provided in the rear facing driver’s side position to allow for mounting of compartments and/or other specified equipment.

CENTER FORWARD FACING CREW SEATS

Two (2) center inboard forward facing crew seats shall be provided. Each seat shall be an H. O. Bostrom SCBA seat and shall have a tapered and padded seat cushion with lumbar support.

Each seat shall include an SCBA storage area with integral headrest.

Each seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The two (2) center inboard forward facing crew seats shall have a flip-up style seat.

Bidder Complies	
Yes	No

Each center forward facing seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

FORWARD FACING CREW SEAT RISER

The center forward facing seats shall be mounted on a aluminum riser that shall be mounted in the center of the cab. The riser shall match the interior of the cab and shall have, compartment doors with latches, to provide additional storage space in the cab, unless area is used for rear air conditioner items.

SEAT UPHOLSTERY MATERIAL

The seats shall be upholstered with heavy duty gray vinyl, or easily washable material as provided by Bostrom.

SEAT BELT CUSHION SENSORS AND BELT SENSORS

The apparatus shall be equipped with an Akron/Weldon seat belt warning system. The system shall consist of a Seat Belt module, dash mounted display and an audible alarm.

Seat belt and seat cushion sensors shall be provided on the five (5) specified seating positions.

VEHICLE DATA RECORDER

A Vehicle Data Recorder (VDR) system shall be provided. The system shall include an NFPA compliant "Black Box" with reporting software that shall be capable of data storage to coincide with the NFPA requirements.

Data storage capabilities shall include interfaces with the following systems:

- Display module (Master Optical Warning Device)
- VDR, date & time stamp
- Max Vehicle speed (MPH)
- Vehicle acceleration / deceleration (MPH/Sec.)
- Engine Speed (RPM)
- ABS event
- Data password protected
- Data sampled once per second, in 48-hour loop
- Data sampled min by min for 100 engine hours
- Throttle position (% of Throttle)
- Data software
- PC / Mac Compatible
- Data summary reports.

A download harness shall be supplied with the system to allow the data to be downloaded to a computer.

Bidder Complies	
Yes	No

INTERIOR CAB STORAGE COMPARTMENT EMS CABINET

A storage compartment shall be mounted in the cab in lieu of the driver's side rearward facing crew seat. The compartment shall be a minimal 46-50" high x 24-28" wide x 24" deep or as deep as allowable.

The compartment shall be constructed of aluminum/stainless steel, painted with textured paint matching the interior color of the cab and shall be equipped with a roll-up door.

Two (2) adjustable shelf(s) shall be provided in the EMS compartment. The shelf(s) shall be constructed from brush aluminum/stainless steel mounted to uni-strut tracking material.

The EMS compartment shall be equipped with LED interior light(s). The lighting shall be wired to automatically activate when the compartment door is open and the master battery switch is in the "on" position.

Mounted inside the EMS cabinet is four (4) 12V auxiliary plugs (cigarette style)(hot all the time) and one (1) double 110V plug wired to the shoreline.

TRAY REAR DOGHOUSE AREA

To construct a tray between the EMS cabinet and rear facing seat, constructed for mounting area of possible lights, thermal image camera, etc. An 110v rec, wired to the shoreline, will be located in this area.

MAP BOOK STORAGE

A map book compartment shall be provided for vertical storage of three (3) 3" 3-ring binders, which shall be top loaded. The storage compartment shall be equipped with or without a hinged lid and shall be constructed from aluminum/stainless steel which shall be painted with textured paint, matching the interior color of the cab.

******* CAB INSTRUMENTATION & CONTROLS *******

DASH & CENTER CONSOLE

The driver and officer side dash, along with the center dash, shall be covered with a custom formed ABS overlay to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The dash gauge panel shall be a custom formed ABS wrap-around design for improved visibility. A full complement of gauges shall be provided in custom formed bezels. The starter and ignition switches shall also be integrated into the left area portion of the gauge panel for easier access.

All warning lights and indicators shall be located in the gauge itself or in the lower center portion. Each gauge shall be equipped with an international symbol that is easily recognizable, denoting the system being monitored. Instrumentation shall be backlit for easy identification when activated.

The transmission gear selector shall be located on the right side of the driver for easy access.

There shall be provisions for mounting a switch panel in the center of the dash between the driver and officer. The top center of the dash assembly shall contain one (1) removable panel to access the main chassis wiring circuits and breaker panels.

Bidder Complies	
Yes	No

DRIVER'S DASHBOARD PANEL

The main instrument panel shall be centered in front of the driver and shall be mechanically fastened to the main dash assembly. The panel shall be made of custom formed ABS that shall contain the primary gauges, an instrument warning light cluster and the ignition and engine start switches.

The main instrument panel shall contain the primary gauges.

Each gauge shall have a raised glass lens with a black matte finish trim ring and be backlit by integral white LED's. Each gauge shall also possess an integral red warning light with a pre-programmed warning light set point. Each gauge warning indicator shall be capable of activating an audible alarm inside the dashboard.

The primary gauges shall consist of:

- Vehicle speedometer (0-80 mph)
- Engine tachometer (0-3000 rpm)
- Engine oil pressure (0-100 psi); low oil pressure warning
- Engine coolant temperature (100-250 °F); high engine temp warning
- Transmission oil temperature (100-350 °F); high transmission fluid temp warning
- Vehicle battery voltage (9-18 VDC); low voltage warning
- Front air system gauge (0-150 psi); low air pressure warning at 65 psi
- Rear air system gauge (0-150 psi); low air pressure warning at 65 psi
- Fuel level (E - 1/2 - F); low fuel level warning
- Air cleaner restriction gauge (0-40), warning at 25”
- Diesel Exhaust Fluid level (E-1/2-F); low fuel level warning @ 1/8 tank
- Engine Hour Meter

Additional auxiliary control switches and instruments (if applicable) shall be located within the dash panel and overhead panel located near the driver's position.

INDICATOR CLUSTER

The system shall be configured with user defined warning messages such as Low Air Pressure or High Coolant Temperature. When these events occur the warning message shall come up on the screen and can be accompanied by a buzzer. The messages shall be prioritized so the most important messages are always displayed. Whether the message can be dismissed by pressing a button shall be configurable. Messages that have been dismissed but are still active shall be retained in the message screens for review until the ignition is turned off. Listed below are the defined telltales and their indicators.

- "Right And Left Directional" arrows (green in color)
- "Ignition ON" Indicator (amber in color)
- "Hi Beam" indicator (blue in color)
- "Battery ON" indicator (green in color)
- "Parking Brake ON" indicator (red in color)
- "Check Transmission" indicator (amber in color)
- "Cab Not Latched" indicator (red in color)
- "Stop Engine" indicator (red in color)
- "Check Engine" indicator (amber in color)
- "ABS Warning" indicator (red in color)
- "Low Coolant Level" (red in color)
- "Fuel Restriction" indicator (amber in color)

- "Water In Fuel" indicator (amber in color)
- "Fasten Seat Belts" indicator (red in color)
- "Fast Idle" Indicator (amber in color)
- "Do Not Move Truck" indicator (red in color)
- "DPF Regeneration" (amber in color)
- "Exhaust High Temperature" (amber in color)
- "Engine Diagnostic Fault" (amber in color)
- "Retarder On" (green in color)

Listed below are indicators that may be included, depending upon the vehicle configuration:

- "Wait To Start" indicator (amber in color)
- "Exhaust System Fault" (amber in color)
- "Topps System Fault" (amber in color)
- "Lube System Active" (amber in color)
- "PTO Engaged" (green in color)
- "Inter Axle Lock" (amber in color)
- "Driver Controlled Diff Lock" (green in color)
- "Ok to Pump" (green in color)
- "Auto Traction Control" (amber in color)
- "Retarder Active" (amber in color)
- "Auxiliary Brake Active" (amber in color).

- "Retarder Active" indicator (yellow in color)

- "Retarder On" indicator (yellow in color)

PUMP SHIFT CONTROL

The pump shift control and pump engaged indicator light shall be mounted in the driver's lower left panel. This control shall be equipped with a mechanical type lock to prevent inadvertent activation or de-activation. The lever positions and indicator light shall be clearly marked.

OFFICER DASH

There shall be a flat surface area in front of the officer for use with such items as a lap top computer, and an LED maplight.

CAB HEATER/DEFROSTER

A heater/defroster, shall be provided, with a minimum @ 350 CFM total air flow. The unit shall supply heat to the cab and provide windshield defrosting through adjustable louvers. The heater/defroster shall be mounted in the center overhead console area, near the windshield. Control shall be located on the front of the heater/defroster unit.

AIR CONDITIONING SYSTEM

A climate-control system shall be provided for total cab environmental comfort. This system shall be able to provide heat and cooling capabilities to various areas in the cab. The system shall consist of one (1) evaporator unit mounted in the cab and a mounted condenser. This system shall provide conditioned air for the front and rear area of the cab.

Bidder Complies	
Yes	No

The evaporator/heater unit shall include the following:

- Dual high output blower.
- High efficiency coil that includes "rifled" tubing and oversized header tubes for maximum refrigerant distribution.
- Eight (8) adjustable 3” diameter louvers shall be furnished; four (4) louvers located in the forward area of the cover and four (4) louvers located in the rear for the crew area.
- An electric water valve in the heat mode controls temperature.
- Unit housing is fully insulated.
- Heating BTU: @ 50,000
- Air Conditioning BTU" @ 34,000
- CFM: @ 410 @ 13.8 volts.

ROOF MOUNT CONDENSER

If a 12-volt, roof top, single condenser is used it shall be strategically positioned on the cab roof so as not to interfere with any emergency lighting systems and shall include the following:

- High performance, long life fan assemblies. Fan motors are sealed around housing and shaft areas.
- Condenser and coil design includes rifled tubing for maximum efficiency. Coil is painted black.
- Condenser unit includes receiver drier with hi/lo pressure switch.
- Wire harness includes necessary wiring for clutch circuit as well as a separate power relay circuit.
- mounting brackets
- condenser frame and fan shroud
- Aluminum cover, E-coated white.

Mounting design shall enable easy servicing of all components and unit replacement if necessary. The evaporator unit shall be covered with an ergonomically designed painted aluminum cover to provide maximum headroom and a pleasing appearance.

CLIMATE CONTROL SWITCHES

The driver’s overhead panel shall contain the controls for the primary cab climate control system. The following controls shall be provided: mode selector switch, front fan speed switch, rear fan speed switch, air conditioning on/off switch, and temperature control dial. All controls shall be clearly labeled, adequately backlit, and installed in an easily removable panel.

CAB TILT ASSEMBLY

A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, cab lift controls and all necessary hoses and valves.

The cab tilt mechanism shall be custom designed for ease of maintenance and consist of two (2) hydraulic cylinders. Hydraulic lines shall be rated at 20,000 PSI burst pressure. The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

Hydraulic cylinders shall be detachable to allow removal of the engine for major service. A remote cable operated mechanical cylinder stay bar and release shall be provided to insure a positive lock in the tilted position.

Bidder Complies	
Yes	No

The cab tilt device shall be both electrically and hydraulically interlocked to prevent inadvertent activation of the cab tilt system.

- A "CAB NOT LATCHED" indicator shall be provided in the cab dash-warning cluster.
- A dual switch control system shall be provided for the cab tilt, located on the passenger side of the vehicle or on the optional tether control. System shall consist of a three (3) position toggle switch along with a rubber covered push button switch.

AUXILIARY MANUAL CAB LIFT

An auxiliary manual cab lift backup system shall be furnished for use in the event of total electrical shutdown.

The cab tilt control shall be equipped with an interlock that shall disable the cab tilt system in the event the parking brake is not applied.

CHASSIS FRAME ASSEMBLY

The chassis frame shall be fabricated in its entirety at the manufacturer's facility. This shall prevent any split responsibility in warranty or service.

All structural fasteners used in the frame shall be Grade 8 hardware. Hardened steel washers shall be used under all bolt heads and nuts to avoid stress concentrations. Top flange shall be free of bolt heads. All spring hangers shall be machined steel castings. The use of Huck bolts shall never be used.

The chassis frame assembly, consisting of frame rails, cross members, axles and steering gear(s), shall be finish painted before installation of any electrical wiring, fuel system components, or air system components. All components or brackets fastened to the frame rails shall be cleaned, primed and painted prior to being attached to the frame rails.

***** FRONT BUMPER, EXTENSION & ACCESSORIES *****

FRONT BUMPER

A @ 12" high, @ 97” to 101" wide, two (2) ribbed, bright finish front bumper shall be provided. The bumper shall be a wrapped design to match the contour of the front cab sheet.

BUMPER EXTENSION

The bumper shall be extended @ 20" with a polished aluminum/stainless steel tread plate gravel shield enclosing the top and ends./

STORAGE WELL - CENTER

One (1) storage well-constructed of aluminum/stainless steel shall be installed in the gravel shield. This storage well shall be center mounted between the chassis frame rails. The bottom of the storage well shall have a minimum of four (4) drain holes.
Storage well to hold 150-200 feet of 1-3/4" fire hose with nozzle.

One (1) hinged, latched, aluminum/stainless steel tread plate cover shall be installed on the storage well located in the center of the bumper extension.

FRONT TOW HOOKS

Two (2) front tow hooks shall be fastened directly to the frame, below the front bumper. The tow hooks shall be fastened with grade 8 bolts and nuts.

Bidder Complies	
Yes	No

FRONT AXLE

The front axle shall be rated at least 20,000 lbs.

FRONT DISC BRAKES

Disc brakes shall be provided for the front axle. The front brakes shall be full air actuated with automatic slack adjustment.

FRONT SUSPENSION

The capacity at ground shall be 20,000 lbs., or exceed the capacity of the axle, unless specified to the contrary in this specification. All springs shall be positively restrained from rotating in brackets and shackles.

FRONT AXLE SHOCK ABSORBERS - SPECIAL FOR FRONT SUCTION

The front suspension system shall be equipped with, double acting hydraulic shock absorbers.

REAR AXLE

Rear axle shall be a single, with a capacity of least 27,000 lbs. (Minimum). Axle shall be a single reduction axle with hypoid gearing and oil-lubricated wheel bearings. Oil seals shall be provided as standard equipment.

REAR BRAKES

Disc brakes shall be provided for the rear axle. The rear brakes will be full air actuated with automatic slack adjustment.

REAR AXLE TOP SPEED

The rear axle/s shall be geared for a vehicle top speed in accordance with NFPA sections 4.15.2 and 4.15.3.

Units with GVWR over 26,000 pounds shall be limited to 68 mph. If the combined tank capacity is over 1250 gallons of foam and water or the GVWR is over 50,000 pounds, the vehicle top speed shall be limited to 60 mph or the fire service rating of the tires, whichever is lower.

REAR SUSPENSION

The rear suspension shall have at least a 31,000 lb. rating.

******* AIR & BRAKE SYSTEM *******

BRAKE SYSTEM

A dual circuit, air operated braking system, meeting the design and performance requirements of FMVSS -121 and the operating test requirements of NFPA 1901 current edition shall be installed. It shall be direct air type with dual air treadle in the cab. The system shall be powered by an engine mounted, gear driven air compressor protected by a heated air dryer.

The air system shall provide a rapid air build-up feature and low-pressure protection valve with light and buzzer, designed to meet the requirements of NFPA 1901, current edition.

Bidder Complies	
Yes	No

ABS SYSTEM

An Anti-Skid Braking System (ABS) shall be provided to improve braking control and reduce stopping distance. This braking system shall be fitted to all of the axles. All electrical connections shall be environmentally sealed, water, weatherproof, and vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel shall transmit wheel speed data to an electronic processor which shall sense approaching wheel lock causing instant brake pressure modulation up to 5 times per second in order to prevent wheel lockup. Each wheel shall be individually controlled.

To improve service trouble shooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started. A dash-mounted light shall go out once the vehicle has attained 4 mph after successful ABS start-up. To improve field performance; the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, the defective circuit shall revert to normal braking action. A warning light shall signal malfunction to the operator. The system shall consist of a wheel mounted toothed ring, sensor, sensor clip, electronic control unit and solenoid control valve.

The sensor clip shall hold the sensor in close proximity to the toothed ring. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion resistant and protected from electromagnetic interference. The electronic control unit shall monitor the speed of each wheel. A deviation shall be corrected by cyclical brake application and release. If a malfunction occurs, the defective circuit shall signal the operator and the malfunctioning portion of the system shall shut down. The system shall be installed in a diagonal pattern for side-to-side control. The system shall insure that each wheel is braking to optimum efficiency up to 5 times a second.

The system shall also control application of the auxiliary engine exhaust or drive line brakes to prevent wheel lock.

This system shall have a three (3) year or 300,000 mile parts and labor warranty as provided by Meritor Wabco Vehicle Control Systems.

BRAKE AIR RESERVOIRS

There shall be a minimum of three (3) air reservoirs installed in conformance with best automotive practices. Reservoir capacity total shall be a minimum of @ 4700 cubic inches.

The air reservoirs shall be color coded to match the air lines for easy identification, ease of maintenance and troubleshooting. The reservoirs shall be painted the following colors:

- Wet Tank — Black
- Primary Tank — Green
- Secondary Tank — Blue
- Auxiliary Tank(s) — Yellow

For ease of daily maintenance, each air system reservoir shall be equipped with a brass 1/4 turn drain valve.

A Rockwell/Wabco System Saver 1200 heated air dryer shall be furnished. An automatic moisture ejector on the primary or wet tank shall also be furnished

Bidder Complies	
Yes	No

AIR LINES

The entire chassis air system shall be plumbed utilizing reinforced, air lines. All of the airlines shall be color coded to correspond with an air system schematic and shall be adequately protected from heat and chafing.

AIR COMPRESSOR

Air compressor shall be a Wabco brand. Air brake system shall be the quick build up type. The air compressor discharge line shall be stainless steel braid reinforced Teflon hose.

A pressure protection valve shall be installed to prevent the use of air horns or other air operated devices should the air system pressure drop below 80 psi (552 kPa).

The chassis air system shall meet NFPA 1901, latest edition for rapid air pressure build-up within sixty (60) seconds from a completely discharged air system. This system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the sixty (60) seconds build-up time.

BRAKE TREADLE VALVE

A dual brake treadle valve shall be mounted on the floor in front of the driver. The brake control shall be positioned to provide unobstructed access and comfort for the driver.

PARKING BRAKE

Parking brake shall be of the spring-actuated type, mounted on the rear axle brake chambers. The parking brake control shall be mounted on the cab center instrument panel, offset toward the driver. A indicator light shall be provided in the driver dash panel that shall illuminate when the parking brake is applied.

FRONT WHEELS & TIRES

The front wheels shall be ten stud, hub piloted polished aluminum disc type.

The aluminum disc front wheels shall be provided with bright nut covers and hub caps.

REAR WHEELS & TIRES

The single rear axle wheels shall be ten stud, hub piloted disc type. The inner wheels shall be painted steel, the outer wheels shall be polished aluminum.

The single rear axle aluminum disc wheels shall be provided with bright nut covers and hub caps.

TIRE PRESSURE MONITORING DEVICES

Each tire shall be equipped with an LED tire alert pressure management system that shall monitor tire pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.

Bidder Complies	
Yes	No

A Cat Eye tire inflation system on rear duals shall be shipped as loose equipment with the truck.

******* ENGINE, TRANSMISSION & ACCESSORIES *******

ENGINE

Engine shall be a Cummins, diesel, turbo-charged, electronically controlled, per the following specifications.

- Max. Horsepower 400-450 HP @ 2000 RPM
- Governed Speed 2200 RPM
- Peak Torque 1150 lb. ft. @ 1400 RPM
- Cylinders Six (6)
- Operating Cycles Four (4)
- Bore & Stroke 4.49 x 5.69 in.
- Displacement 543 cu. in.
- Compression Ratio 16.6:1
- Governor Type Limiting Speed
- Drive line Size 1710.

Engine oil filters shall be engine manufacturers branded or approved equal. Engine oil filters shall be accessible for ease of service and replacement.

A fuel/water separator shall be provided.

ENGINE CHASSIS CERTIFICATION

The engine shall be installed in accordance with engine manufacturer's instructions. The apparatus manufacturer shall be able to furnish proof of engine installation approval by the engine manufacturer.

COOLING/RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

To provide maximum corrosion resistance and cooling performance, the entire radiator core shall be constructed using long life aluminum alloy. The core shall be made of aluminum fins, having a serpentine design, brazed to aluminum tubes. The tubes shall be brazed to aluminum headers. No solder joints or leaded material of any kind shall be acceptable in the core assembly.

The radiator shall be compatible with commercial antifreeze solutions.

There shall be a full steel frame around the entire radiator core assembly. The radiator core assembly shall be isolated within the steel frame by rubber inserts to enhance cooling system durability and reliability. The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

The cooling system shall include a surge tank mounted to the top of the radiator framework that shall remove air in the system. The surge tank shall be equipped with a sight glass to monitor the level of coolant. The radiator shall be equipped with a dual seal cap that shall allow for expansion and recovery of coolant into a separate integral chamber.

Bidder Complies	
Yes	No

The cooling system shall be designed for a maximum of fifteen (15) PSI operation.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

Extended life engine coolant shall provide anti-freeze protection to -30° F. The mixture shall be per the engine manufacture's specifications.

The engine cooling system shall have an inline coolant filter that shall have a shut off valve for ease of maintenance.

The engine cooling system shall be certified by the engine manufacturer to meet cooling index requirements for a minimum ambient temperature or 110-degrees Fahrenheit.

TRANSMISSION COOLER

A shell and tube transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature. The cooler shall have an aluminum shell and copper tubes. The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil. No brazed, soldered, or welded connections shall be used to separate the coolant from the oil.

RADIATOR SKID PLATE

The radiator installation shall include a heavy-duty radiator skid plate to protect the radiator from debris or obstructions under the chassis. The skid plate shall be designed so the angle of approach is not effected.

CHARGE AIR COOLER

The charge air cooler shall be constructed of aluminum with cast aluminum side tanks. To not restrict air flow to the radiator, the charge air cooler shall designed to be an integral part of the radiator assembly, mounted directly on top of the radiator. Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

Where applicable, the charge air cooler pipes shall be constructed of appropriately sized aluminized steel tubing and formed hose barbs. The connections between these pipes, the engine and charged air cooler, shall be made using high temperature silicone hoses rated for use in temperature up to 500°F, and heavy duty constant tension T-Bolt spring hose clamps. These connections shall adequately allow for movement of the engine relative to the charged air cooler.

Charge air coolers that are located in front of the radiator, that block or restrict air flow into the engine radiator or introduce above ambient temperature air into the radiator in any way shall not be used.

COOLING SYSTEM FAN

The engine cooling system shall incorporate a heavy duty fan, installed on the engine and include a shroud.

The fan shall be equipped with an air operated clutch fan, which shall activate at a pre-determined temperature range.

Recirculation shields shall be installed to ensure that air which has passed through the radiator is not drawn through it again.

Bidder Complies	
Yes	No

COOLANT HOSE AND PIPING

All coolant piping shall be constructed of appropriately sized powder coated steel tubing with @ 0.06" wall thickness and formed hose barbs. All connections between coolant pipes and chassis components shall be made using appropriately sized silicone hoses or elbows, rated for use in temperatures ranging from -60°F to +350°F, and appropriately sized constant torque hose clamps. These connections shall be minimal in number to reduce the number potential leak points, and shall adequately allow for movement of the engine relative to chassis mounted components. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

HEATER HOSES

Premium blue heater hoses shall be furnished for the heater system. All heater hoses shall be equipped with constant torque type hose clamps and inline shut off valves on each hose supplying heat to the cab. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

ENGINE FAST IDLE

A fast idle for the electronic controlled engine shall be provided. The fast idle shall be controlled by an ON/OFF illuminated rocker switch on the dash.

An electronic interlock system shall prevent the fast idle from operating unless the transmission is in "Neutral" and the parking brake is fully engaged. If the fast idle control is used in conjunction with a specified engine/transmission driven component or accessory, the fast idle control shall be properly interlocked with the engagement of the specified component or accessory.

AIR CLEANER

An engine air cleaner shall be provided. The air cleaner shall include a dry type element and shall be installed in accordance with the engine manufacturer's recommendations. The air cleaner shall be located to, with streamline air pipes and hump hose connections from the inlet to the air cleaner and from the air cleaner to the turbo. The air cleaner shall be easily accessible when the cab is tilted. The air cleaner shall be plumbed to the air intake system that shall include a self-sealing connection between the cab and air cleaner assembly to allow the cab to be tilted.

SPARK ARRESTOR

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers. The spark arrestor housing must be easily accessible when the cab is tilted.

ACCELERATOR CONTROL

A floor mount accelerator pedal shall be installed on the floor in front of the driver. The pedal shall be positioned for comfort with ample space for fire boots and adequate clearance from the brake pedal control.

TRANSMISSION

An Allison World Transmission, electronically controlled, automatic transmission shall be provided. Transmission specifications shall be as follows:

- Max. Gross Input Power @ 450 HP
- Max. Gross Input Torque @ 1250 lb. ft.
- Input Speed (Range) @ 2000- 2800 RPM
- Direct Gear (Pumping) 4th (Lock-up)

Bidder Complies	
Yes	No

Transmission installation shall be in accordance with the transmission manufacturer's specification. The transmission shall be readily and easily removable for repairs or replacement.

The transmission shall contain a built-in output retarder, controlled by an on/off switch on the dash, and actuated by utilizing the brake pedal.

One (1) PTO opening shall be provided on both the left and right side of the converter housing (positions four (4) o'clock and eight (8) o'clock).

The transmission shall be calibrated for five (5) forward gears and one (1) reverse gear. Each gear shall have the following @ ratios:

- First 3.49:1
- Second 1.86:1
- Third 1.41:1
- Fourth 1.00:1
- Fifth 0.75:1
- Reverse -5.03:1

An illuminated, touch-pad type shift control shall be mounted in the cab, convenient to the driver. Shift control shall be approved by the transmission manufacturer.

TRANSMISSION OIL LEVEL SENSOR

The transmission shall be equipped with the oil level sensor (OLS); this sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

PARK TO NEUTRAL

The transmission, upon application of the parking brake, shall automatically shift into neutral.

RETARDER OPERATION W/BRAKE PEDAL

Retarder control shall be through a switch on the dash, with activation of the retarder in conjunction with the brakes via the brake pedal.

A temperature gauge and indicator light shall be provided for retarder monitoring.

DRIVE LINES

Drive lines shall be heavy duty series or equal, with "glide coat" splines on all slip shafts. The chassis manufacturer shall utilize an electronic type balancing machine to statically and dynamically balance all drive shafts. The manufacturer shall provide proof of compliance with all drive shaft manufacturer's standards and specifications.

DIESEL EXHAUST FLUID TANK

An approximately five (5) gallon diesel exhaust fluid (DEF) tank shall be provided and installed. The tank shall be mounted and shall be accessible through a door.

The tank shall include an internal heater that will be fed by engine coolant directly from the engine block to ensure it is always kept at the proper temperature per EPA requirements. The tank shall include a temperature sensor to control the flow of the engine coolant from the heater valve to the DEF tank.

Bidder Complies	
Yes	No

A DEF fluid level sensor shall be provided with the DEF tank and connected to the level gauge on the dashboard.

EXHAUST SYSTEM

The exhaust system shall be installed in accordance with the engine manufacturer's requirements and meet all Environmental Protection Agency and State noise level requirements. Exhaust system components shall be securely mounted and easily removable.

The diesel particulate filter/muffler shall be fabricated from stainless steel and of a size compatible with the engine exhaust discharge.

Exhaust tubing shall be a minimum of 16 gauge stainless steel from the turbocharger on the engine to the inlet of the diesel particulate filter. Any flexible exhaust tubing shall be HDT stainless steel type. To minimize heat build-up, exhaust tubing within the engine compartment shall be wrapped with an insulating material. Exhaust shall be wrapped from the turbocharger to the entrance of the muffler. Material shall be held in place with worm gear type clamps.

An exhaust diffuser shall be provided to reduce the temperature of the exhaust as it exits the tailpipe.

Separate "regeneration" enable and prohibit switches shall be provided under the dash board on the driver's side. Each switch shall be provided with a spring loaded protective cover and shall be clearly marked as to function.

SELECTIVE CATALYTIC REDUCTION (SCR)

The vehicle shall be equipped with SCR technology that uses a urea based diesel exhaust fluid (DEF) and a catalytic converter to significantly reduce oxides of nitrogen (NOx) emissions.

The SCR system shall reduce levels of NOx (oxides of nitrogen emitted from engines) by injecting small quantities of diesel exhaust fluid (DEF) into the exhaust upstream of a catalyst, where it vaporizes and decomposes to form ammonia and carbon dioxide. The ammonia (NH3), in conjunction to the SCR catalyst, converts the NOx to harmless nitrogen (N2) and water (H2O).

The exhaust tailpipe extending from the SCR catalyst to the side of the vehicle shall be constructed from 16-gauge aluminized steel tubing. The exhaust discharge shall be on the officer side of the apparatus forward of the rear axle.

****** FUEL SYSTEM ******

FUEL TANK

Fuel tank shall be a minimum of fifty (50) gallon capacity. It shall have a minimum fuel filler neck of 2" ID. A 1/2" minimum diameter drain plug shall be provided. The tank shall be baffled and secured with stainless steel strapping and rubber isolator pads. Provisions for an additional feed line and fuel level float shall be provided for future use.

The fuel tank shall be installed behind the rear wheels between the frame rails.

The fuel tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume.

The fuel lines shall be textile reinforced synthetic rubber or plastic hose that is approved for use with diesel fuel and has a minimum max temperature rating of 250° F. The lines shall be sized to meet engine manufacture's requirements, and shall be carefully routed and secured along the inside of the frame rails.

Bidder Complies	
Yes	No

FUEL FILTER/WATER SEPARATOR

A fuel filter/water separator shall be provided in the fuel system. A "water in fuel" indicator shall be provided on the dash.

SECONDARY ELECTRIC FUEL PUMP

In addition to the primary fuel pump, a secondary electric fuel pump for re-priming shall be furnished in the main fuel line. A labeled control switch shall be provided on the main dash panel, if needed.

FUEL POCKET

A fuel fill shall be provided in the left side rear wheel well area. A heavy duty spring loaded hinged fill door shall be provided.

DUAL POWER STEERING

A dual power steering system shall be provided utilizing a main steering gear on the driver side of the chassis and a steering gear on the officer side of the chassis.

The power steering gear on the officer side of the chassis shall increase performance in turning the officer side wheel assembly, reducing loads and forces on the main gear and components.

The steering system shall be designed to maximize the turning capabilities of the front axle no matter the rating and tire size. The use of a power assist cylinder on the officer side of the chassis is NOT ACCEPTABLE on front axles of this capacity.

The system shall be designed utilizing an engine driven hydraulic pump, with a maximum operating pressure of @ 2000 PSI. Steering design shall permit a maximum of @ 5.6 turns from stop to stop. Steering system components shall be mounted in accordance with the steering gear manufacturer's instructions.

STEERING COLUMN

The steering column shall be a tilt and telescope column. A lever mounted on the side of the column shall control the tilt and telescope features.

There shall be a self-canceling lever that shall control the following functions:

- Left and right turn signals
- High beam activation
- Hazard warning switch

STEERING WHEEL

The steering wheel shall be, vinyl padded, minimum 18" diameter, with a center hub mounted horn button.

ROAD SAFETY KIT

A road safety kit shall be furnished with the following equipment:

- 2 1/2 lb. B-C fire extinguisher
- Triangle safety reflectors.

Bidder Complies	
Yes	No

******* CHASSIS/BODY ELECTRICAL & ACCESSORIES *******

CHASSIS ELECTRICAL SYSTEM

All electrical wiring in the chassis shall be GXL cross link insulated type. Wiring is to be color coded and include function codes every @ three (3) inches on both sides. Wiring harnesses shall be routed in protective, heat resistant loom, securely and neatly installed. At least two (2) power distribution centers shall be provided in central locations for greater accessibility. The power distribution centers shall contain thermal automatic reset breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays shall have a capacity substantially greater than the expected load on the related circuit, thus ensuring long component life. Power distribution centers shall be composed of a system of interlocking plastic modules for ease in custom construction.

The power distribution centers are function oriented. The first is to control major truck function. The second shall control center to overhead switching and interior operations. Each module is single function coded and labeled to aid in troubleshooting. The centers will also have accessory breakers and relays for future installations. All harnesses and power distribution centers shall be electrically tested prior to installation to ensure the highest system reliability.

All external harness interfaces shall be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points shall be mounted in accessible locations. Complete chassis wiring schematics shall be supplied with the apparatus.

WIRING HARNESS DESCRIPTION

Wiring shall be uniquely identified by color code or circuit function code, labeled at a minimum of every @ three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

The covering of harnesses shall be moisture resistant loom
All circuits shall conform to SAEJ1292. All circuits must be provided with low voltage over current protective devices.

All exposed electrical connections will be coated with “Z-Guard” to prevent corrosion.

DIRECT GROUNDING STRAPS

Direct grounding straps shall be mounted to the following areas; frame to cab, frame to body and frame to pump enclosure.

All exposed electrical connections shall be coated to prevent corrosion.

EMI/RFI PROTECTION

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through

wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference the purchaser may be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

12 VOLT ELECTRICAL SYSTEM TESTING

The apparatus low voltage electrical system shall be tested and certified by the manufacturer. The certification shall be provided with the apparatus. All tests shall be performed with air temperature between 0°F and 100°F.

The following three (3) tests shall be performed in order. Before each test, the batteries shall be fully charged.

TEST #1-RESERVE CAPACITY TEST

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for 10 minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure.

TEST #2-ALTERNATOR PERFORMANCE TEST AT IDLE

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

TEST #3-ALTERNATOR PERFORMANCE TEST AT FULL LOAD

The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of less than 11.7 volts DC for a 12 volt system, for more than 120 seconds, shall be considered a test failure.

LOW VOLTAGE ALARM TEST

Following completion of the preceding tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts shall be considered a test failure. The battery system shall then be able to restart the engine.

At time of delivery, documentation shall be provided with the following information:

- Documentation of the electrical system performance test
- A written load analysis of the following;
- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.

- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

LOAD MANAGEMENT SYSTEM

A load management system shall be provided. The load manager shall have 16 programmable outputs to supply warning and load switching requirements. The load management system shall be capable of offering load sequencing, load shedding, fast idle control, low voltage warning, scene mode operation and response mode operation.

Outputs 1 thru 12 shall be independently programmable to activate during the scene mode, the response mode or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output 13 shall be designated to activate a fast idle system. Output 14 shall provide a low voltage warning for an isolated battery. Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts. Output 16 shall provide a low voltage alarm that activates at the NFPA required 11.8 volts.

The load management shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode.

The load management shall also be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection.

CHASSIS DIAGNOSTICS SYSTEM

Diagnostic ports shall be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic system shall include the following:

- A single port to monitor the engine, transmission and ABS system and diagnostics of the roll sensor (if applicable)
- Engine diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes)
- Allison Transmission Codes (through touch pad shifter)

VOLTAGE MONITOR SYSTEM

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

Bidder Complies	
Yes	No

12 VOLT SEQUENCER

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Rear of cab Air-Conditioning and Heat shall be load managed.

ELECTRICAL HARNESS REQUIREMENT

To ensure dependability, all 12-volt wiring harnesses installed by the manufacturer shall conform to the following specifications:

- SAE J 1128 - Low tension primary cable
- SAE J 1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
- SAE J 163 - Low tension wiring and cable terminals and splice clips
- SAE J 2202 - Heavy duty wiring systems for on-highway trucks
- NFPA 1901 - Standard for automotive fire apparatus
- FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses
- SAE J 1939 - Serial communications protocol
- SAE J 2030 - Heavy-duty electrical connector performance standard
- SAE J 2223 - Connections for on board vehicle electrical wiring harnesses
- NEC - National Electrical Code
- SAE J 561 - Electrical terminals - Eyelet and spade type
- SAE J 928 - Electrical terminals - Pin and receptacle type A.

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes is never allowed at the manufacturer.

Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wire colors shall be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 3.00" intervals. All wiring installed between the cab and into doors shall be protected by a wire conduit to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

- All holes made in the roof shall be caulked with silicon. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.

- For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
- Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
- Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas shall have protective coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
- Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
- Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
- All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

BATTERY CABLE INSTALLATION

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

- SAE J 1127 - Battery Cable
- SAE J 561 - Electrical terminals, eyelets and spade type
- SAE J 562 - Nonmetallic loom
- SAE J 836 A - Automotive metallurgical joining
- SAE J 1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
- NFPA 1901 - Standard for automotive fire apparatus.

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

- Splices shall not be allowed on battery cables or battery cable harnesses.
- For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be marked red in color. All negative battery cables shall be black in color.
- For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
- For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.
- An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

ALTERNATOR

There shall be a minimum of a 320 amp brushless, serpentine belt driven alternator. The brushless design of the 40SI transfers magnetic fields between the rotor and stator air-gap without brushes.

The alternator installation shall be designed to provide maximum output at engine idle speed, by using “Remote Sense” in order to meet the minimum continuous electrical load of the apparatus as required.

The alternator shall carry a 3 Year/Unlimited Mile warranty.

Bidder Complies	
Yes	No

BATTERY SYSTEM

At least three (3), maintenance free batteries shall be provided. These batteries shall be wired in parallel to the master disconnect switch. Each battery shall be rated at 925 CCA at 0° F and shall have a reserve capacity of 180 minutes.

Wiring for the batteries shall be 4/0 welding type dual path starting cables per SAEJ541.

BATTERY STORAGE

Batteries shall be securely mounted in a fixed tray, located on the side of the chassis frame. Complete access shall be provided when the cab is fully tilted. Batteries shall be mounted on non-corrosive matting material.

The battery tray shall be able to withstand a longitudinal acceleration of -46.5g at 0.246 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center.

BATTERY DISCONNECT SWITCH

The chassis batteries shall be wired in parallel to a single 12 volt electrical system, controlled through a heavy duty master disconnect switch. The master disconnect switch shall be located within easy access of the driver upon entering or exiting the cab.

BATTERY JUMPER STUDS

A set of battery jumper studs, (red) and (black) shall be provided to allow the battery system to be jump started or charged from an external source. The studs shall be located on the bottom area of the battery box or the driver's side of the chassis. Each stud shall be equipped with both a rubber protector cap and a 2” square non-conductive plate to prevent accidental shorting.

120 VOLT SHORELINE CONNECTION - "SUPER 30" AUTO EJECT

One (1) Kussmaul "Super 30" Auto Eject model 091-159-30-120, automatic, 120 volt, 30 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The disconnect shall be equipped with a three pin receptacle, which shall automatically eject the shoreline when the vehicle starter is energized. A label shall be provided indicating voltage and amperage ratings.

SHORELINE POWER INLET PLATE

A shoreline power receptacle information plate shall be permanently affixed at or near the power inlet. The plate shall indicate the following;

- Type of Line Voltage
- Current Rating in Amps Power Inlet Type (DC or AC).

The Kussmaul auto-eject connection shall be equipped with a Yellow weatherproof cover.

The shoreline receptacle shall be located in the area directly adjacent to the driver's side cab door.

Bidder Complies	
Yes	No

BATTERY CHARGER / AIR COMPRESSOR SYSTEM

A Kussmaul model # 091-9-12V-1200, "Pump Plus 1200" air compressor/high output battery charger shall be provided for maintaining the vehicle's air / battery system. Unique electronic sensing circuits sense the true battery voltage while eliminating the need for external sense wires. Output current shall be 40 amperes @ 12 volt DC.

The air compressor shall maintain the air pressure in the chassis air brake system while the vehicle is not in use. The air compressor shall have a rated input at 12 volt DC @ 12 amps and a max output of 100psi.

An LED bar graph display shall be located near the shoreline connection to monitor the battery status.

A Kussmaul # 091-9-090 Auto Drain ACHP shall be installed to protect the Auto Pump from built up moisture.

OUTLET STRIP

One (1) 3' long outlet strip shall be installed on the rear of the doghouse. Each outlet strip shall have four (4) duplex household receptacles.

EMERGENCY SWITCHES

A switch control console shall be provided in a center panel between the driver's and officer's position. This console shall separate the emergency / auxiliary electrical functions from the regular chassis functions. A minimum of ten (10) rocker type switches with integral indicator lights shall be provided, in addition to the Load Manager indicator.

A master warning switch shall be provided, which shall allow pre-setting of emergency light switches and shall have a red integral indicator light. Next to the master switch, a total of eight (8) load manageable emergency switches shall be provided. The last remaining switch shall be a ground light switch. All switches, (other than the master switch), shall have switch function labeling and an amber integral indicator light.

"LED" CAB INTERIOR LIGHTING

Four (4) interior LED combination red/white dome lights shall be furnished in the cab, two (2) in the forward section and two (2) in the rear crew section. Each dome light shall have an integral selector switch. Each dome light shall also activate when the respective, adjacent cab door is opened.

One (1) combination red/white LED dome light(s) shall be furnished in the rear crew section of the cab. Each additional dome light(s) shall have an integral selector switch.

INNER CAB DOOR LED FLASHERS

One (1) flush mounted LED flashing light, with integral flasher, shall be provided on the inside door panel of each cab door. The light shall be recessed into the door's lower scuff plate and shall be activated when the respective door is opened. Each light shall be furnished with a red lens.

REMOTE CONTROLLED CAB SPOTLIGHT

A Golight model # 20204 LED remote controlled spotlight shall be provided and mounted on the officer side of the cab roof. The Golight spotlight shall be equipped with a LED light and shall be controlled from the cab. The remote control shall be mounted in easy reach of the driver and officers or as directed by the fire department.

Bidder Complies	
Yes	No

"DO NOT MOVE APPARATUS" WARNING LIGHT

A 1" round, red flashing warning light with an integral audible alarm shall be functionally located in the cab to signal when an unsafe condition is present; such as an open cab or body compartment door, an extended ladder rack, a deployed stabilizer, an extended light tower or any other device that may be opened, extended or deployed and might cause damage to the apparatus if it is moved.

This light shall be activated through the parking brake switch to signal when the parking brake is released. This light shall be labeled "DO NOT MOVE TRUCK".

12 VOLT POWER PORT - EMS COMPARTMENT

Four (4) 12 volt power port accessory outlet(s) shall be installed in the cab of the truck for the fire departments accessory devices. The port(s) shall be located in the rear EMS compartment, as directed, for devices such as cellular phones.

12 VOLT ACCESSORY CIRCUIT - CAB DASH

One (1) dedicated circuit; 12 volt, 40 Amp, power and ground on 3/8 stud and fused at battery shall be provided in the cab dash. The circuit shall be for future installation of radios or accessories.

12 VOLT ACCESSORY CIRCUIT - CREW CAB AREA

A dedicated 12 volt power and ground circuit shall be provided in the rear EMS compartment. The circuit shall be for future installation of accessories.

DUAL CAMERA SYSTEM

A rear vision camera system shall be provided to allow the driver to visually see the rear of the apparatus while in the cab. The system shall include a flat panel LCD color monitor mounted adjacent to the driver and a color camera that shall be mounted at the rear of the vehicle.

In addition to the rear vision camera, a side mounted camera shall be mounted on the officer side of the cab.

The cameras shall be wired as follows:

- The side vision camera shall automatically activate when the officer side turn signal is activated.
- The rear vision camera shall automatically activate when the chassis transmission is placed in reverse.

REAR CAMERA GUARD

One (1) formed aluminum diamond plate shield shall be provided and mounted over the rear view camera to protect it from being damaged.

The monitor for the rear vision system shall be mounted ceiling of the cab in easy view of the driver.

HEADLIGHTS CLUSTER

Two (2) quad, halogen headlight modules with a bright finish bezel shall be furnished, one (1) each side, on the front of the cab. Each head light module shall incorporate an individual low beam and a high beam headlight. High beam actuation shall be controlled on the turn signal lever.

Bidder Complies	
Yes	No

DAYTIME RUNNING LIGHTS

The chassis head lights shall have integrated circuitry to actuate the low beam headlights at a maximum of 80 percent of capacity whenever the chassis engine is running.

The daytime running lights shall be interlocked with the parking brake.

SECONDARY DUAL LIGHT MODULE

Two (2) Whelen 60A00TAR arrow shaped, amber LED turn signals shall be provided, one (1) in each side of the dual light module above the headlights.

The NFPA required, Zone "A" lower warning lights shall be incorporated into each side dual light module noted above.

DOT MARKER LIGHTS AND REFLECTORS

Five (5) DOT approved Whelen (or equal) Light Emitting Diode (LED) cab marker lamps shall mounted on the top front edge of the cab roof.

Amber LED marker lights with integral reflectors shall be provided on the side of the cab adjacent to the driver's door, one (1) each side.

Red LED marker lights with integral reflectors shall be provided at the lower side rear, one (1) each side.

Yellow LED side marker and turn lights shall be provided on the apparatus lower side, forward of rear axle, one (1) each side.

Red LED clearance lights shall be provided on the apparatus rear upper, one (1) each side at the outermost practical location.

Red LED 3-lamp identification bar will be provided on the apparatus rear center. The lights shall be red in color.

Yellow reflectors shall be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30' long or longer.

Red reflectors shall be provided on the apparatus rear, one (1) each side at the outermost practical location.

LICENSE PLATE LIGHT - REAR

One (1) Weldon model # 9186 license plate light shall be provided above the mounting position of the license plate. The light shall be clear and shall have a chrome finish.

TAIL, STOP, TURN AND BACK-UP LIGHTS

Two (2) Whelen 600 series, 4-1/8" x 6-1/2", LED red combination tail and stop lights, shall be mounted one each side at the rear of the body.

Two (2) Whelen 600 series, 4-1/8" x 6-1/2", LED amber arrow turn signal lights, shall be mounted one each side, on a vertical plane with the tail/stop lights.

Bidder Complies	
Yes	No

Two (2) Whelen 600 series, 4-1/8" x 6-1/2", white LED back-up lights, shall be mounted one each side on a vertical plane with the turn/tail/stop signals. These lights shall activate when the transmission is placed in reverse gear.

Two (2) Whelen PLAST4V mounting flanges, installed one (1) on each side, shall be provided to mount the lights described above in one common mounting flange. The fourth opening shall be for the lower rear warning lights.

The lights shall be mounted in order, from top to bottom, as described above.

CAB STEP LIGHTS

Chrome plated shielded LED chassis step lights shall be provided and controlled with marker light actuation. Step lights shall be located to properly illuminate all chassis access steps and walkway areas.

BODY STEP LIGHTS

Chrome plated shielded LED body step lights shall be provided and controlled with marker light actuation. Step lights shall be located to properly illuminate all body access steps and walkway areas.

DUNNAGE AREA LIGHTING

Two (2) chrome plated LED lights shall be provided in the dunnage area to provide adequate illumination of this area.

DECK LIGHTS / WORK LIGHTS

Two (2) 6" Unity model AG chrome plated deck lights shall be provided and mounted on the rear stanchions, one (1) each side. Each individual deck light shall be controlled by an individual switch mounted on each light, as well as by a single master switch in the master warning switch console.

The deck lights shall also serve as rear work lights to illuminate the rear of the apparatus to meet NFPA-1901 requirements.

SCENE LIGHTS - REAR OF BODY

Two (2) large LED scene lights shall be provided, one on each side of the rear body panel in a chrome plated flange. The scene lights shall be controlled by a rocker switch in the master warning light switch console. All scene lights shall be wired through the load management system.

SCENE LIGHTS - DRIVER SIDE OF BODY

Two (2) large LED scene lights shall be provided. The scene lights shall be installed one rearward and one forward on the driver side of the body in a chrome plated flange. The scene lights shall be wired through the load management system.

SCENE LIGHTS - OFFICER SIDE OF BODY

Two (2) large LED scene lights shall be provided. The scene lights shall be installed one rearward and one forward on the officer side of the body in a chrome plated flange. The scene lights shall be wired through the load management system.

SCENE LIGHTS-CAB DOOR OPEN

If cab door is open it shall operate the scene lights on specific side.

Bidder Complies	
Yes	No

REAR OF BODY LIGHT SWITCHING - CAB

A switch shall be provided in the cab warning light switch console to turn the rear of body lights on and off.

DRIVER SIDE OF BODY LIGHT SWITCHING - CAB

A switch shall be provided in the cab warning light switch console to turn the driver side of body lights on and off.

OFFICER SIDE OF BODY LIGHT SWITCHING - CAB

A switch shall be provided in the cab warning light switch console to turn the officer side of body lights on and off.

GROUND LIGHTS - CAB

One (1) rubber mounted halogen ground light shall be provided under each side cab door entrance step, four (4) total. The ground lights shall turn on automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console.

Each light shall illuminate an area at a minimum 30" outward from the edge of the vehicle. The rear crew door ground lights shall be positioned at an angle rearward to provide illumination at the pump panel and the front of the body work areas.

ROOF MOUNT 150W BROW LIGHT - ABOVE WINDSHIELD

Fire Research Corp. contour roof mount light shall be installed. The mounting brackets shall attach to the bottom of the lamp head and be machined to conform to the roof radius. Wiring shall extend from a weatherproof strain relief at the rear of the lamphead.

The lamphead shall have be a Spectra LED head. It produces @20K Lumens. Lamphead and brackets shall be powder coated white. The floodlight shall be UL listed as scene lights for fire service use.

The LED brow mounted flood light shall be located above the windshield in the center of the cab.

LIGHT(S) ABOVE WINDSHIELD SWITCHING - CAB

A switch shall be provided in the cab warning light switch console to turn the light(s) above windshield on and off.

Bidder Complies	
Yes	No

****** BODY ELECTRICAL SYSTEM ******

12 VOLT BODY ELECTRICAL SYSTEM

All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical controls shall be located in a central area near the circuit breakers.

All lines shall be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram. A complete wiring diagram shall be supplied with the apparatus.

Wiring shall be carefully protected from weather elements and snagging. Heavy duty loom shall be used for the entire length. Grommets shall be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA 1901.

BODY ELECTRICAL JUNCTION COMPARTMENT

A weather resistant electric junction compartment shall be provided within the body or pump enclosure, depending on vehicle configuration. This compartment shall provide an easily accessible enclosure to house all of the body wiring junction points, terminal strips, solenoids, etc. The design of this compartment shall not decrease the storage capacity area of the compartment or area in which it is located. A removable panel shall be provided for access to this compartment.

PUMP ENCLOSURE WORK LIGHTS

Two (2) lights shall be provided inside the pump enclosure providing a minimum of 20 candlepower illumination. Each light shall have their own independent switch incorporated into the light head.

ENGINE COMPARTMENT WORK LIGHTS

Two (2) lights shall be provided inside the engine enclosure that will provide a minimum of 20 candlepower illumination. Each light shall have their own independent switch incorporated into the light head.

COMPARTMENT LIGHTS - LED

Each individual, equipment storage compartment shall be equipped with a LED light fixture bar mounted one each side of the forward (and rear) vertical door frame.

NFPA AUDIBLE AND LIGHTING WARNING PACKAGE

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901 Fire Apparatus Standard. The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

Bidder Complies	
Yes	No

LIGHT PACKAGE ACTUATION CONTROLS

The entire warning light package shall be actuated with a single warning light switch located on the cab switch panel. The wiring for the warning light package shall engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system shall be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

WARNING LIGHT FLASH PATTERN

All of the perimeter warning lights shall be set to an NFPA compliant flash pattern by the apparatus manufacturer.

UPPER LEVEL LIGHTING - WHELEN

NFPA ZONE A, UPPER

A Whelen # FN72VLED "Edge Freedom", 72" LED cab roof warning light bar shall be furnished and rigidly mounted on top of the cab roof.

The light bar shall be equipped with the following:

- Clear Lenses
- Four Corner Red Linear LED's
- Two Red Forward Facing Linear LED's
- Two White Forward Facing Linear LED's.

NFPA ZONE C, UPPER

Two (2) Whelen M6* super LED light heads shall be furnished and mounted one (1) each side on the upper rear face of the body, facing rear.

Two (2) Whelen M6* super LED light heads shall be furnished and mounted one (1) each side on the mid rear face of the body, facing rear.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

NFPA ZONES B & D REAR, UPPER

Two (2) Whelen M6* super LED light heads shall be furnished and mounted one (1) each side on the upper side face, towards the rear of the body, facing to each side of the unit.

Two (2) Whelen M6* super LED light heads shall be furnished and mounted one (1) each side on the upper side face, towards the front of the body, facing to each side of the unit.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

NFPA ZONES B & D REAR, LOWER

Two LED mini lights mounted in the lower rear rub rails (on each side) facing out, color shall be red/white split color.

Bidder Complies	
Yes	No

NFPA ZONES B & D FRONT, UPPER

The lighting requirement for this area is covered by the lights noted in Zone "A" - Upper.

LOWER LEVEL LIGHTING - WHELEN

NFPA ZONE A, LOWER

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

The lower Zone A warning lights shall be mounted in the custom chassis headlight bezels.

NFPA ZONE C, LOWER

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side directly below the DOT stop, tail, turn and backup lights.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

NFPA ZONES B & D FRONT, LOWER

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

The lower Zone B & D warning lights shall be mounted on the sides of the custom chassis front bumper.

NFPA ZONES B & D MIDSHIP, LOWER

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

NFPA ZONES B & D REAR, LOWER

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a colored lens.

The lights shall be installed with a chrome plated mounting flange.

Bidder Complies	
Yes	No

DIRECTIONAL LIGHT

One Whelen LED @36" wide Traffic Advisor shall be mounted on rear of truck.

WARNING LIGHT SYSTEM CERTIFICATION

The warning light system(s) specified above shall not exceed a combined total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

The warning light system(s) shall be certified by the light system manufacturer(s), to meet all of the requirements in the current revision of the NFPA 1901 Fire Apparatus Standard as noted in the General Requirements section of these specifications. The NFPA required "Certificate of Compliance" shall be provided with the completed apparatus.

******* AUDIBLE WARNING EQUIPMENT *******

ELECTRIC HORN

A single electric horn activated by the steering wheel horn button shall be furnished.

BACK-UP ALARM

A back-up alarm, shall be provided and installed at the rear of the apparatus under the tailboard. The back-up alarm shall activate automatically when the transmission is placed in reverse gear and the ignition is "on".

AIR HORNS

Two (2) chrome plated air horns shall be at the front of the vehicle. The air horns shall be mounted in full compliance with NFPA-1901. The supply lines shall be dual lines with equal distance from each horn.

Both air horns shall be recessed in the front bumper.

The air horn(s) shall be controlled by a foot switch on the officer's side. A lanyard cord mounted from ceiling between driver and officer.

ELECTRONIC SIREN AND SPEAKER

Two (2), 100 watt electronic siren shall be provided featuring: remote control head recessed in center dash panel as space allows, "Si-Test" self-diagnostic feature, six (6) function siren, radio repeat and public address.

The electronic siren and speaker shall meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.

Polished aluminum siren speakers shall be provided, recessed in the front bumper and wired to the electronic siren.

FEDERAL Q2B MECHANICAL SIREN

One (1) Federal Model #Q2B mechanical siren shall be provided to provide audible warning.

The Q2B siren shall be mounted on the extended bumper on the driver's side or recessed mounted into the bumper. The siren shall be equipped with a Federal model #P, chrome housing.

One (1) floor mounted foot switches shall be provided, one (1) for the officer and one (1) Steering wheel horn switch for the driver. A siren brake button shall be provided near the driver and officer's position.

FIRECOM MODEL #5100D DIGITAL INTERCOM SYSTEM

A Firecom model # 5100D digital intercom system shall be provided in the front of the cab. The system shall be capable of interfacing with a two-way radio system (note: an authorized two-way radio installer shall be responsible for interfacing the intercom system with the two-way radio).

The 5100D master station shall have the following features:

- Single radio monitor and transmit selector switch
- Touch-pad adjustable volume and squelch
- Advanced digital signal processing noise-reduction
- Single auxiliary input/output connection
- Nominal 12v power supply
- Six (6) jacks for wireless base stations and/or wired headset connections; expandable up to twelve (12) daisy-chained wired headsets

The intercom system shall include:

DRIVERS AND OFFICERS HEADSETS & BASE STATION FOR WIRELESS FIRECOM SYSTEM

Two (2) UHW-51 wireless under helmet radio transmit headsets, each with their own paired base station, shall be furnished for the driver and officer seating locations in the cab. The headsets shall have adjustable volume, noise-canceling electric microphone, adjustable head strap, a flex-style boom which rotates for left or right dress and a charging port to connect the 12 volt charger when the headset is not in use. The sets shall also have comfortable ComLeather ear seals.

Two (2) wireless, single user, base stations shall be connected via a 6 conductor flat RJ-6 cable to any headset port on the Firecom 5100D series intercom. The base station will provide full duplex audio communication between the wireless headset and the intercom as well as PTT communication through the apparatus mobile radio.

Two (2) yellow, NFPA compliant, rubber coated steel headset hanger hooks shall be furnished in the front section of the cab to hold the driver and offer intercom headsets while not in use.

FIRECOM REMOTE HEAD

A 5100DRH remote head shall be surface mounted in the cab as directed by the fire department. The remote head shall have the same controls as the master base station.

RADIO INTERFACE CABLE

One (1) radio interface cable, model # 110-5101-30 and one (1) extension cable model # 108-0086-00 shall be provided and installed from the firecom base unit to the area of where the mobile radio base station shall be mounted. The end of the cable that connects to the mobile radio shall be un-terminated and shall be the responsibility of the radio installer to provide and install the correct adapter to connect the cable to the mobile radio.

Bidder Complies	
Yes	No

REAR JUMPSEAT HEADSETS

Three (3) UHW-52 wireless under helmet intercom headsets shall be furnished for three (3) rear jump seat locations. The intercom headsets shall have adjustable volume, noise-canceling electric microphone, adjustable head strap, a flex-style boom which rotates for left or right dress and a charging port to connect the 12 volt charger when the headset is not in use. The sets shall also have comfortable ComLeather ear seals.

WIRELESS BASE STATION

One (1) wireless, multiple user, base station shall be provided and connected via a 6 conductor flat RJ-6 cable to any headset port on the main Firecom base station. The wireless base station shall provide full duplex audio communication between the wireless headset and the intercom.

Three (3) yellow, NFPA compliant, rubber coated steel headset hanger hooks shall be furnished to hold the intercom headsets while not in use.

One (1) PP-20 water resistant plug-in modules shall be furnished for intercom headset acceptance at the pump panel.

****** PUMP AND PLUMBING ******

PUMP

- **HALE QMAX-150**
- **1500 G.P.M.**
- **Single Stage**

The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 P.S.I. net pump pressure
- 100% of rated capacity at 165 P.S.I. net pump pressure
- 70% of rated capacity at 200 P.S.I. net pump pressure
- 50% of rated capacity at 250 P.S.I. net pump pressure.

PUMP ASSEMBLY

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1500 gallons per minute (U.S. GPM), NFPA-1901 rated performance.

PUMP CONSTRUCTION

The entire pump shall be manufactured and tested at the pump manufacturer's factory.

The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to performance specs as outlined by the latest NFPA-1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron are not acceptable.

Bidder Complies	
Yes	No

Pump body shall be horizontally split, on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

PUMP SHAFT

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished under packing with galvanic corrosion (zinc foil separators in packing) protection for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

PUMP IMPELLER

The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance.

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

PUMP PACKING GLAND

The pump shaft shall have only one (1) packing gland located on inlet side of the pump. It shall be a split design for ease of repacking. The packing gland must be a full circle threaded design to exert uniform pressure on packing and to prevent cocking and uneven packing load when it is tightened. It shall be easily adjusted by hand with rod or screwdriver with no special tools or wrenches required. The packing rings shall be of a unique permanently lubricated, long life graphite composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion.

PUMP DRIVE UNIT

The drive unit shall be completely assembled and tested at the pump manufacturer's factory.

Pump drive unit shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine in both road and pump operating conditions. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat treated chrome nickel steel and at least 2-3/4 inches in diameter on both the input and output drive shafts. They shall withstand the full torque of the engine in both road and pump operating conditions.

All gears, both drive and pump, shall be of the highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated, chrome-shaven and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.

Bidder Complies	
Yes	No

PUMP RATIO

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

The manufacturer shall supply at time of delivery copies of the pump manufacturer's certification of hydrostatic testing, the engine manufacturer's current certified brake horsepower curve.

PUMP SHIFT CONTROL

The drive unit shall be equipped with a power shift. The shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder with stainless steel shaft. An air operated in-cab control for rapid shift shall be provided that locks in road or pump, with a neutral position for use when manual override is required.

MAIN PUMP - PUMP SHIFT INDICATOR LIGHTS

For automatic transmissions, three (3) green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift for Road to Pump position. Two (2) green lights to be located in the truck driving compartment and one (1) green light on pump operator's panel adjacent to the throttle control. For manual transmissions, one (1) green warning light shall be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

TRANSMISSION LOCK

The automatic transmission furnished in the chassis shall have a lock-up assembly which brings the transmission to direct drive and prevents the transmission from shifting gears while in the pumping mode.

BRAKING SYSTEM

A positive braking system shall be provided to prevent vehicle movement during pumping operations. The air brakes furnished must satisfy this requirement.

MAIN PUMP MOUNTS

Extra heavy duty pump mounting brackets shall be furnished. These shall be bolted to the frame rails in such a position to perfectly align the pump so that the angular velocity of the drive line joints shall be the same on each end of the drive shaft. This shall assure full capacity performance with a minimum of vibration. Mounting hardware shall utilize Grade 8 bolts.

Pumps which are not mounted directly to the frame will not be considered. Under no circumstance shall the pump function as a frame cross member.

******* PRESSURE CONTROL & ACCESSORIES *******

TPM- TOTAL PRESSURE MASTER RELIEF VALVE SYSTEM

Unit to have the Hale TPM, Total Pressure Master Relief Valve which i**s a standard item** from Hale for their CAFS system.

Bidder Complies	
Yes	No

AKRON / ELKHART INTAKE RELIEF VALVE

An Akron Model 59 or similar Elkhart intake relief valve system shall be plumbed on the suction side of the pump to comply fully with NFPA-1901 requirements. Excess pressures shall be plumbed to discharge water under the pump enclosure away from the pump operator.

PUMP CERTIFICATION

The pump shall be third party performance tested to meet the requirements of NFPA-1901. To ensure top quality and integrity, the test company shall be Underwriters Laboratories (UL).

PRIMING SYSTEM

The priming pump shall be a 12-volt Hale model ESP Oil-Less, positive displacement vane type primer, electrically driven. One priming control shall open the priming valve and start the priming motor. The primer shall be capable of priming without the use of primer oil. The primer shall be connected to the power source with a 300 amp fusible link.

The Hale primer shall be activated by a manual valve located on the pump operator's panel. The valve shall activate the primer motor, which shall create a vacuum. Valve actuation may be accomplished while the main pump is operational, if necessary to assure complete prime.

MASTER DRAIN VALVE

A rotary type, 12 port master drain valve shall be provided and controlled at the lower portion of the side pump panel. The valve shall be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories. Water shall be drained below the apparatus body and away from the pump operator.

INDIVIDUAL BLEEDERS AND DRAINS

All lines shall drain through the master drain valve or shall be equipped with individual drain valves, easily accessible and labeled.

One (1) individual "Innovative Control" lift up drain valve shall be furnished for each 1-1/2" or larger discharge port and each 2-1/2" gated auxiliary suction.

Drain/bleeder valves shall be located at the bottom of the side pump module panels.

All drains and bleeders shall discharge below the running boards.

SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush and air bleeder valves.

TOP MOUNT PUMP MODULE

The pump module shall be a self-supported structure mounted independently from the body and chassis cab. The design must allow normal frame deflection without imposing stress on the pump module structure or side running boards. The pump module shall be securely mounted to the chassis frame rails.

The pump module shall incorporate a formed structure on the top front to support the top mount control panel and required mechanical control handles.

Bidder Complies	
Yes	No

TOP MOUNTED VALVE CONTROLS

The valves shall be controlled by vertically operated swing handles. Each handle shall be equipped with a twist-lock, easy-grip knob. The valve control handles shall be mounted in-line. Each valve control handle shall be connected to its respective valve via a control rod and a bell crank mechanism, or cable system if needed. Each pressure gauge shall be located directly above its respective discharge control handle, and shall be clearly marked by color coded name plates. Colors to be determined by Fire Dept.

The pump module shall be a welded frame work utilizing structural steel components properly braced to withstand the rigors of chassis frame flex.

FULLLY HINGED PUMP PANELS, LEFT & RIGHT SIDE

Two (2) vertically hinged pump panels with push style latches shall be installed and constructed of the same material as stated in the pump module specifications. The hinged panels replace the current left and right hand lower removable panels for ease of access to the pump compartment from either side of the apparatus during routine maintenance.

PUMP AREA OPENINGS FOR ROUTINE MAINTENANCE

Besides the two side hinged pump panel doors, the front (third side) needs to be easily accessible to the pump area for routine maintenance.

DUNNAGE AREA

A dunnage area shall be provided above the pump enclosure, behind the top mount control panel, for equipment mounting and storage. This area shall be furnished with a removable 3/16" aluminum tread plate floor and shall be enclosed on the sides.

NOTE: The size of this storage area may vary when top mounted crosslays, etc., are specified and located in this area.

TRANSVERSE WALKWAY

There shall be a transverse walkway located at the rear of the chassis cab, ahead of the pump module. The walkway shall be constructed of aluminum tread plate and shall be clear and unobstructed for through traffic. Folding step(s) shall be provided if necessary to maintain NFPA step heights. If steps adjacent to walkway (such as commercial chassis cab access steps) provide NFPA compliant step height, folding steps shall not be provided.

A miscellaneous equipment storage compartment shall be provided at either side of the walkway, outboard of the chassis frame rails. A vertically hinged, aluminum tread plate door with positive closure latch shall be provided on the outboard face of each compartment. Compartments shall be ventilated.

The pumphouse walkway shall be approximately 20" wide or more.

The rear of Cab to be protected with Aluminum / stainless steel Diamond Plate on the full rear of cab.

******* PUMP SUCTIONS & AUXILIARY INLETS *******

SUCTION INLETS

Two (2) 6" N.S.T. suction inlets shall be provided, one on the driver side and one on the officer side pump panel. A removable strainer shall be installed on each inlet.

INTAKE BUTTERFLY VALVE - ELECTRIC OPERATED - DRIVER SIDE

The fire pump shall be fitted with a Hale Master Intake Valve (MIV), on the driver side main suction inlet. The valve shall be mounted between the suction tube extension and the suction tube, and shall be recessed behind the operator's panel. The valve body and all related components that are in contact with water shall be manufactured of fine grained, corrosion resistant bronze. The valve shall have a bore of 6.40". The valve shall incorporate a pressure relief valve, set at the pump manufacturer's facility to a rating of 125 PSI. The pressure relief valve shall provide protection for the suction hose even with the valve in the closed position. The valve shall incorporate NFPA-1901 compliant, large diameter hose air bleed valve, controlled at the operator's panel.

The valve shall be operated by a twelve (12) volt DC motor, as standard. It shall also incorporate a knob control manual override, mounted at the suction inlet. The electric control shall incorporate a placard with status lights to indicate whether the valve is in the closed, open or throttled position. The valve shall not be able to move from fully open to fully closed in under three (3) seconds, in compliance with NFPA-1901.

INTAKE BUTTERFLY VALVE - ELECTRIC OPERATED - OFFICER SIDE

The fire pump shall be fitted with a Hale Master Intake Valve (MIV), on the officer side main suction inlet. The valve shall be mounted between the suction tube extension and the suction tube, and shall be recessed behind the operator's panel. The valve body and all related components that are in contact with water shall be manufactured of fine grained, corrosion resistant bronze. The valve shall have a bore of 6.40". The valve shall incorporate a pressure relief valve, set at the pump manufacturer's facility to a rating of 125 PSI. The pressure relief valve shall provide protection for the suction hose even with the valve in the closed position. The valve shall incorporate NFPA-1901 compliant, large diameter hose air bleed valve, controlled at the operator's panel.

The valve shall be operated by a twelve (12) volt DC motor, as standard. It shall also incorporate a knob control manual override, mounted at the suction inlet. The electric control shall incorporate a placard with status lights to indicate whether the valve is in the closed, open or throttled position. The valve shall not be able to move from fully open to fully closed in under three (3) seconds, in compliance with NFPA-1901.

PUMP SUCTION ENDS

The main pump suction inlets shall be furnished with a short suction end, terminating with only the suction threads protruding through the side panel to minimize the distance an exterior appliance protrudes beyond the pump panel.

The two (2) suction caps provided as standard equipment shall be deleted.

One (1) 6" NSTF x 5" Storz 30° degree adapter and cap shall be provided for the driver side main suction inlet.

One (1) 6" NSTF x 5" Storz 30° degree adapter and cap shall be provided for the officer side main suction inlet.

Bidder Complies	
Yes	No

AUXILIARY SIDE SUCTION(S)

One (1) 2-1/2" auxiliary suction shall be provided at the driver side pump panel. The 2-1/2" auxiliary suction shall terminate with a removable strainer, chrome plated 2-1/2" NST female swivel with a chrome plated plug and retaining chain.

All side gated inlet valves shall be recess mounted behind the side pump panels or body panels.

TANK TO PUMP

One (1) 4" tank to pump line shall be, piped through the front bulkhead into the tank sump. This line shall be plumbed directly into the rear of the pump suction manifold for maximum efficiency.

A check valve shall be provided to prevent accidental pressurization of the water tank through the pump connection. Connection from the valve to the tank shall be made by using a non-collapsible flexible rubber hose.

An Akron Brass or Elkhart 3” Valve shall be provided between the pump suction manifold and the water tank. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

A locking push/pull swing control handle shall be located on the operator's panel with function plate.

TANK FILL

One (1) 2" gated full flow pump to tank refill line controlled at the pump panel shall be provided. A deflector shield inside the tank shall be furnished. Tank fill plumbing shall utilize 2" high pressure hose for tank connection to accommodate flexing between components.

An Akron Brass or Elkhart Valve shall be provided between the pump discharge manifold and the water tank. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

A locking push/pull swing control handle shall be located on the operator's panel with function plate.

******* DISCHARGES & ACCESSORIES - TOP MOUNT *******

DRIVER'S SIDE MAIN DISCHARGE #1

A discharge shall be provided and located at the driver's side pump panel. The driver's side discharges # 1 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass or Elkhart 2 1/2" Valve shall be provided for the driver's side #1 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

Bidder Complies	
Yes	No

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, and chrome plated elbow.

A 2 1/2" NST chrome plated pressure vented cap shall be installed on driver's side #1 discharge.

The driver's side # 1 discharge valve shall be controlled by a locking push/pull swing handle located on the top mount operator's panel.

The driver's side # 1 discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

DRIVER'S SIDE MAIN DISCHARGE #2

A discharge shall be provided and located at the driver's side pump panel. The driver's side discharges # 2 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass or Elkhart 2 1/2" Valve shall be provided for the driver's side #2 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, and chrome plated elbow.

A 2 1/2" NST chrome plated pressure vented cap shall be installed on driver's side # 2 discharge.

The driver's side # 2 discharge valve shall be controlled by a locking push/pull swing handle located on the top mount operator's panel.

The driver's side # 2 discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

OFFICER'S SIDE MAIN DISCHARGE #1

A discharge shall be provided and located at the officer's side pump panel. The officer's side discharges #1 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass or Elkhart 3" Valve shall be provided for the officer's side #1 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve shall be equipped with a straight 3" NST adapter that shall be equipped with a 3" NST, 30-degree, and chrome plated elbow.

The officer's side # 1 discharge cap provided as standard equipment shall be deleted.

A 3" NSTF X 5" Storz straight adapter with cap shall be provided on the officer's side # 1 discharge.

The officer's side # 1 discharge valve shall be controlled by a locking push/pull swing handle located on the top mount operator's panel.

The officer's side # 1 discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

OFFICER'S SIDE MAIN DISCHARGE #2

A discharge shall be provided and located at the officer's side pump panel. The officer's side discharges #2 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass or Elkhart 2 1/2" Valve shall be provided for the officer's side #2 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve shall be equipped with a straight 2 1/2" NST adapter that shall be equipped with a 2 1/2" NST, 30-degree, and chrome plated elbow.

A 2 1/2" NST chrome plated pressure vented cap shall be installed on officer's side #2 discharge.

The officer's side #2 discharge valve shall be controlled by a locking push/pull swing handle located on the top mount operator's panel.

The officer's side #2 discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

TOP MOUNT DISCHARGE CONTROLS

All top mount valves shall be controlled by a locking push/pull swing handle unless otherwise noted in the individual discharge below.

DRIVER SIDE REAR DISCHARGE

A 3" NST rear discharge shall be provided at the rear of the vehicle, plumbed from the pump.

The rear discharge shall terminate on the rear body panel, on the driver side of the body just below the hose bed.

The driver side rear discharge pipe shall be equipped with a chrome 3" NSTM thread adapter.

The driver side rear discharge shall be plumbed utilizing 3" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the rear of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass or Elkhart 3" Valve shall be provided for the driver side rear discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The driver side rear discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The driver side rear discharge cap provided as standard equipment shall be deleted.

One (1) 3" NSTF X 5" Storz shall be provided on the driver's side rear discharge, with a 5" storz cap by 21/2 M threads and 21/2 cap.

The driver side rear discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

Bidder Complies	
Yes	No

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

OFFICER'S SIDE HOSE BED DISCHARGE

A 2 1/2" NST rear hose bed discharge shall be plumbed to the upper front body panel, extending into the front of the hose bed.

The rear hose bed discharge shall terminate just above the hose bed floor, in the officer's side front of the hose bed.

The officer's side hose bed discharge pipe shall be equipped with a chrome 2 1/2" NSTM thread adapter.

The officer's side hose bed discharge shall be plumbed utilizing 2 1/2" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the rear of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass or Elkhart 2 ½" Valve shall be provided for the hose bed officer's side rear discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The officer's side hose bed discharge valve shall be controlled by a push/pull handle located on the operator's panel.

One (1) 2 1/2" NST chrome plated pressure vented cap shall be installed the officer's side hose bed discharge.

The officer's side hose bed discharge shall be equipped with a 2 ½ "diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

DECK GUN DISCHARGE

A deck gun discharge shall be plumbed from the pump to an area on top of the vehicle. The deck gun piping shall be firmly supported and braced.

The deck gun discharge shall be located in the dunnage area above the pump module on the officer's side of the vehicle. A pedestal type, steel plate support assembly shall be provided to stabilize deck gun plumbing below deck gun mount flange.

The deck gun discharge pipe shall terminate with 3" NPT threads and a 81315001 3" Companion Flange Kit to mate up with the 8298P 2.0 adapter.

The deck gun piping shall be designed so the overall height of the deck gun in the mounted/stowed position does not exceed the tallest point on the cab/body.

The deck gun discharge shall be plumbed utilizing 3" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the deck gun location.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass / Elkhart 3" Valve shall be provided for the deck gun discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The deck gun discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The deck gun discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

ELKHART MANUAL DECK GUN

An Elkhart Stinger 2.0 8297 series deck gun shall be supplied and mounted on the deck gun discharge of the unit to provide the maximum travel clearance. The deck gun monitor shall be able to be removed and placed on a ground base to be used away from the apparatus.

The deck gun shall come with the following standard components:

- Upper & Base Unit
- Stream Shaper, 282-A
- The Pipe Extension Adapter

ELKHART TOP MOUNT FLANGE ADAPTER

An Elkhart 4-bolt top mount flange 8298F 2.0 (includes the anti-rotation pins for the Pipe Extension) shall be installed on the deck gun discharge to allow the monitor to be disconnected and used with the portable ground base.

ELKHART QUAD STACKED TIPS

A set of Elkhart #ST-194, 2-1/2" inlet, and quad stacked tips shall be provided with the monitor.

Bidder Complies	
Yes	No

FRONT DISCHARGE

A 1 1/2" front #1 discharge shall be plumbed to the front bumper of the vehicle.

The front discharge shall terminate on the top of the front bumper extension, (located near the rear corner of the hose well) with a chrome 1 1/2" NSTM chicksan swivel adapter.

The front discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the front of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability. Automatic discharge drains shall be provided at all low points in the plumbing.

An Akron Brass or Elkhart 2" Valve shall be provided for the front #1 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The front discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The front discharge cap provided as standard equipment shall be deleted.

The front discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

HORIZONTAL CROSSLAY / SPEEDLAY #1

The West Lafayette Fire Dept. is used to crosslays, but whichever way, (crosslay or speedlay) fits the design (for space consideration) of this apparatus will work for us.

A crosslay / speedlay hose bed shall be provided and plumbed from the pump in a transverse design, located for quick attack deployment. The hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay / speedlay #1 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose and a nozzle.

Crosslay / speedlay #1 hosebed shall be designed to accommodate the fire hose in a double stack configuration.

The discharge shall terminate below the hosebed floor with a 1 1/2" NSTM chicksan swivel adapter. The hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

Bidder Complies	
Yes	No

The #1 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass or Elkhart 2" Valve shall be provided for the #1 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The #1 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The #1 discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

HORIZONTAL CROSSLAY / SPEEDLAY #2

The West Lafayette Fire Dept. is used to crosslays, but whichever way, (crosslay or speedlay) fits the design (for space consideration) of this apparatus will work for us.

A crosslay / speedlay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay / speedlay #2 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose and a nozzle.

Crosslay / speedlay #2 hosebed shall be designed to accommodate the fire hose in a double stack configuration.

The discharge shall terminate below the hose bed floor with a 1 1/2" NSTM chicksan swivel adapter. The hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

The #2 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass or Elkhart 2" Valve shall be provided for the #2 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

Bidder Complies	
Yes	No

The #2 discharge valve shall be controlled by a push/pull handle located on the operator's panel.

The #2 discharge shall be equipped with a 2 ½" diameter pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

******** CONCENTRATE PIPING & FOAM SYSTEM ********

FOAM PIPING

All foam concentrate plumbing from the tank or auxiliary foam inlet to the foam system components shall be stainless steel.

The foam system piping shall incorporate a check valve to prevent water from entering the foam tank; the discharge piping shall also include a check valve to prevent foam solution from back feeding into the discharge side of the pump. Individual discharge piping shall be as specified for each discharge.

The complete foam system shall be tested in accordance with NFPA-1901.

HALE CAFS-PRO 750 GPM
SYSTEM DESIGN

The apparatus drive engine output, fire pump output, and air compressor output shall be designed to meet the criteria of CAFS performance required by the end user taking delivery of the apparatus.

The apparatus manufacturer shall specify these requirements before the installation of the system components. Final performance of this requirement is to be verified by the end user.

FIREPUMP

The selected Hale fire pump when utilized in a C A F S application shall be equipped with the following items.

- Thermal Relief Valve 120L (port B).
- Three (3) alloy anodes (2 suction, 1 discharge) (ports UT, VT, D).
- TPM Relief valve.
- Four (4) inch Air Operated tank valve (including a tank to pump check valve).
- Openings at D, E, F & G machined.
- Tachometer Drive – cable and panel adapter.
- VPS shift with control.

The following specification denotes a fully integrated Compressed Air Foam System (CAFS) to be installed on the mid-ship fire pump within the fire apparatus.

Bidder Complies	
Yes	No

FOAM INJECTION CHECK VALVE

The foam concentrate pump discharge line shall be equipped with a bubble tight check valve, rated at 500 PSIG (34 BAR) and 10 GPM (38 LPM), to prevent water flow into the concentrate pump from the apparatus fire pump. This valve shall have a cracking pressure of 4- 6 PSIG (0.3- 0.4 BAR) to prevent flowing concentrate through the pump due to head pressure from the concentrate reservoir.

FOAM STRAINER

In-line, field serviceable foam concentrate strainer(s) shall be installed in the foam concentrate suction line(s). Full flow ball valves shall be installed in an accessible location to permit foam tank shutdown and service of this strainer. The strainer screen shall be of reusable stainless steel mesh.

CAFS PIPING

All water, air and foam concentrate piping and hoses within the CAF System shall meet NFPA standards. Hoses shall be compatible with oil, air and water at all maximum working pressures and maximum expected temperatures. Air piping and valves shall be adequate to carry air at the rated SCFM (SLPM) capacities. Foam solution and CAFS pipe work shall be 300 series stainless steel or brass construction.

MIXING CHAMBERS

Stainless steel static mixing chambers shall be installed on the discharge of CAFS System. These mixing chambers shall consist of modular bronze cast sections utilizing integrally cast fins for semi-directional motionless agitation of the foam solution and air flow, creating a CAFS discharge. Additional static mixers are required on the 3" deck gun after the discharge valve.

DISCHARGE PIPING CHECK VALVES

Check valves shall be installed on all foam equipped fire pump discharges to prevent foam solution from entering the fire pump. Check valves shall also be installed upstream of any compressed air injection device. These check valves shall be of compact double door design and shall be constructed of stainless steel. The check valve doors shall be spring loaded, normally closed, by means of one or more heavy-duty stainless steel torsional springs. Flow from the fire pump shall cause the doors to open and upon pump or discharge line shutdown, the torsion spring shall shut the doors before reverse flow starts and at a point of zero velocity. Seating shall be resilient and water tight. Under no circumstances shall center guide, tilting disc, swing or globe check valves be accepted.

FOAM SOLUTION TO AIR RATIO CONTROL

Foam solution to Air Ratio Control shall be incorporated in the CAFS discharge plumbing. This control shall be automatically regulated by the panel digital control to maintain air/foam solution ratios, and allow the pump operators to select foam consistencies from wet to dry. No single or multiple manual lever actuators shall be accepted.

The foam solution to air ratio control shall also is the compressed air injection point common for all the compressed air foam discharges. One panel-mounted operator’s control shall be provided for foam consistency control of all the CAFS discharges.

The foam solution to Air Ratio Controls shall be designed to not shut the water flow off even under an error or failure condition. The entire CAFS manifold system shall flow 750 GPM of water or foam solution.

Bidder Complies	
Yes	No

SCFM (NCMH) AIR FLOWMETER

A digital readout flow meter showing standard cubic feet per minute (SCFM) or normal cubic meters per hour (NCMH) shall be installed to read gross CAF System air output (actual flow) of the rotary air compressor. The display shall be mounted on the pump operator's panel. The air flow meter sensor shall automatically compensate for temperature and pressure and read directly in SCFM (NCMH). Flow meters that do not automatically compensate for temperature and pressure shall not be accepted. The sensor for the flow meter shall be incorporated into the system plumbing.

CAFS OPERATING CONTROLS

All CAFS operating controls (foam concentrate proportioning system control, digital water and air flow meters) shall be mounted and integrated as part of the main apparatus pump panel. Under no circumstances shall auxiliary control panels be permitted. Under no circumstances shall an Auxiliary module type CAFS package be installed on the apparatus. No auxiliary drive engines shall be permitted for the CAFS installation.

Compressor, Foam Proportioner and CAFS controls shall be engaged and enabled when pump is placed in pumping gear. CAFS shall be available by opening the discharge valve for the specific CAFS equipped discharge. CAFS and or Foam solution may be turned off independently at the control panel. Compressor can be disengaged at the control panel.

A liquid filled Duplex Master Gauge shall be installed on the pump panel showing fire pump discharge and CAF System air discharge pressures. A red needle for air and a black needle for water pressure shall operate on a common gauge face.

Safety enhancement features incorporated into the CAF System shall include an electric switching relay to close a solenoid valve located on the outlet of the CAF System. This switching relay shall close the air solenoid when a transducer monitoring the output of the foam concentrate pump reads no foam pump output, or if no water is flowing, or if the foam tank is empty. This solenoid shall prevent the injection of air when foam concentrate is not being injected, thus preventing slug-flow conditions.

Safety placards shall be installed upon the apparatus providing warnings against the use of the compressed air source for SCBA or any other breathing apparatus. Warning placard should also warn against using hose caps because of the possibility of residual compressed air in hose lines and within the apparatus piping that potentially could propel caps and other objects causing personal injury.

DOCUMENTATION

The foam proportioning system when delivered to the end user shall include: a foam concentrate compatibility list and (2) two Description, Installation and Operation Manuals. The foam proportioning system shall have a one-year limited manufacturer warranty.

CAFS SYSTEM TRAINING

Hale shall provide three (1) day delivery and demonstration program by a factory direct engineer, dates to be agreed on with the Fire Department.

HALE FOAMLOGIX 5.0

The apparatus shall be equipped with an automatic electronically controlled, direct injection, rotary gear pump, and discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

Bidder Complies	
Yes	No

SYSTEM REQUIREMENTS

The complete foam proportioning system shall include the following;

- Foam Pump
- Control System
- Tank Selector and Flushing Valves
- Foam Concentrate Strainer
- Integral Check Valve/ Injector Fitting
- Flowmeter
- Control Cables
- SAE J1939 CAN Capable Connection
- Low Tank Level Switch (Switches)
- Water Discharge Check Valves
- Foam Tank(s)
- Documentation.

FOAM PUMP

The foam proportioning system shall be compatible with most Class A foam concentrates and most high viscosity normal hydrocarbon or polar solvent Class B foam concentrates. The foam proportioning system shall be capable of delivering the rated foam concentrate flow with the above mentioned foam concentrate types. Foam system manufacturer shall provide a list of foam chemicals that have been tested for compatibility with the foam pump.

The foam proportioning system shall be based on an electric motor driven, rotary gear foam concentrate pump, rated at 5.0 GPM (19 LPM) foam concentrate flow rate with maximum operating pressure of 250 PSIG (17 BAR). The electric motor shall be powered by 12 volts direct current with a ¾ Hp (0.5 Kw) power operating at a maximum current draw of 60 AMPS.

The rotary gear pump shall be close coupled to the motor without an oil filled gearbox. The foam concentrate pump and all wetted parts of the system shall be constructed of corrosion resistant materials compatible with all foam concentrates being used. The pump body, pump head and pump cover shall be constructed of bronze with pump shaft, gears and bearings constructed of stainless steel. A mechanical pump shaft seal shall be provided to prevent foam concentrate leakage around the rotating shaft. An internal foam concentrate relief valve constructed of stainless steel and preset at the factory for maximum system operating pressure shall be incorporated into the foam pump to protect the pump from over-pressurization. NO components of the foam concentrate pump and wetted parts of the foam system shall be manufactured of aluminum.

The foam pump/motor assembly shall be permanently attached to an apparatus mountable base plate. A foam concentrate flowmeter shall be integral to the foam concentrate pump. The foam concentrate flowmeter shall provide a signal to the electronic control unit to make sure the proper amount of foam concentrate is injected into the discharge stream.

The entire base plate mounted assembly shall have electrical components sealed to NEMA 4X or equiv. for mounting in the apparatus pump compartment or any suitable location on the apparatus. The pump shall be mounted to allow gravity feed of foam concentrate from the foam tank to the pump.

Bidder Complies	
Yes	No

CONTROL SYSTEM

The system shall be equipped with an electronic control unit, suitable for installation on the pump operator panel as the single point of operation for the foam proportioning system. Incorporated within the control unit shall be a microprocessor that receives input from water flowmeter(s) while receiving foam concentrate pump output information from the foam concentrate flowmeter. The microprocessor, through constant comparison of the flow signals, shall ensure the operator preset proportional amount of foam concentrate is injected into the discharge stream of the fire pump. Control unit shall utilize a single sealed electrical connector on the rear panel. Wiring harness shall provide an SAE J1939 CAN connection for diagnostics and systems operations/communications. Control unit shall have an environmentally sealed membrane front panel and sealed metallic housing.

The electronic control unit shall permit the pump operator to perform the following control and operation functions for the foam proportioning system:

- Provide push-button ON/OFF control of foam proportioning system.
- Provide push-button control of foam proportioning rates from 0.1% to 10.0%, in 0.1% increments.
- Show real time flow rate of water or foam solution.
- Show total volume of water or foam solution discharged during and after foam operations.
- Show foam concentrate injection rate.
- Show total amount of foam concentrate consumed.
- Permit resetting of totalized values for water and foam concentrate.
- Simulate water flow rates for manual operation, calibration and testing of foam system.
- Enable system setup and full range system diagnostic functions.
- Indicate on LED bar graph foam concentrate is being injected and the foam system capacity.
- Indicate on LED bar graph when system capacity is not within design parameters.
- Store independent default values for Class A and Class B foam concentrate injection.
- Flash a “low concentrate” warning when the foam concentrate tank runs low.
- Flash a “no concentrate” warning and shut the system off when the foam tank is empty.
- Flash a “low battery” warning when battery voltage is low enough to affect system operation.
- Flash a “hot” warning when system is running hot due to low voltage or radiant heat.
- Read out calibration valves to allow setting up a replacement unit.

A power distribution box shall be attached to the base plate to provide ease of installation. The distribution box shall be sealed to a NEMA 4X or equiv. rating to permit installation in the pump compartment.

Foam concentrate flow feedback shall be provided to the control unit through the distribution box by a sensor mounted in the foam pump body. Rotors in the foam discharge side of the foam pump shall provide the targets to pulse the sensor to generate a feedback signal.

The distribution box shall receive 12 volt direct current power from the apparatus electrical system as the only source of power to operate the system and power component sensors. Control power shall be distributed to the control unit, flowmeter sensor and foam concentrate feedback sensor through a conductor in the cable sets provided by the foam proportioner manufacturer. The microprocessor in the control unit shall process input signals from the flowmeter sensor and foam feedback sensor to determine the proper duty cycle for the electric motor to run. The distribution box shall provide power to the electric motor, based on signals received from the control unit, at a variable rate to ensure that the correct proportion of foam concentrate, preset by the pump operator on the control unit, is injected into the water pump discharge stream. The distribution box shall have a main power control switch and over current protection for the foam proportioning system.

All primary electrical wires for the foam concentrate system shall be type SXL or GXL (SAE J1128) per NFPA requirements. Electrical connections shall be made using heavy duty 5/ 16 inch (min) diameter studs and nuts.

Bidder Complies	
Yes	No

SINGLE FOAM TANK FLUSH

When dual foam concentrate tanks ARE NOT installed flushing capabilities can be provided with a three-way flush valve. A switch provided integral to the three-way valve shall indicate when the valve is in the "FLUSH" position. The "FLUSH" position shall provide fresh water-flushing capabilities to prevent foam concentrate deterioration of the foam pump. When FLUSH is selected the foam pump shall only run for 10 seconds. NFPA required flushing water check valves shall be provided with the single tank flush selector valve.

INTEGRAL CHECK VALVE/ INJECTOR FITTING and WATERWAY CHECK VALVES

To prevent contamination of the foam concentrate supply, foam concentrate shall be injected into the water pump discharge stream through an integral check valve/ injector fitting. The check valve/ injector fitting shall be of one piece body construction of brass, with stainless steel wetted parts.

To prevent contamination of the water pump and apparatus booster tank spring loaded double-door type check valves shall be installed in the water pump discharge piping prior to the foam injection point.

FLOWMETER

A paddlewheel type flowmeter with a stainless steel impeller wheel shall monitor water flow in foam capable discharges. The flowmeter shall have a 500 PSIG (34 BAR) pressure rating per NFPA requirements.

One flowmeter is required for proper operation of the foam proportioning system. Power for the flowmeter sensor shall be provided through the cable set from the control unit.

The flowmeter selected shall be sized to adequately monitor the minimum and maximum flow expected in the foam capable discharges.

CONTROL CABLES

The cables for connection of the control unit, distribution box, flowmeter sensor, flowmeter display units, pressure transducers and feedback sensor shall have the ability to connect together and total length shall not exceed 40 feet (12 meters). The connections shall be keyed to prevent misconnection and improper system operation. Where required a shield drain wire shall be tied to one of the pins on each end of the cable. No externally attached ferrite beads shall be installed for the purpose of electrical shielding. When properly connected the connections shall be sealed to NEMA 4X or equivalent.

LOW TANK LEVEL SWITCH

A low tank level switch shall be installed in each foam concentrate tank that supplies foam concentrate to the foam proportioning system. The low tank level sensor shall be connected to the foam proportioning system to provide protection against dry running of the foam pump. The low tank level sensor can be mounted on the side, bottom or top of the foam concentrate tank. The low tank level sensor and electrical connections shall be sealed to prevent infusion of foam concentrate into the wiring and possible short circuit of the tank level sensor. The low tank sensor shall be mounted so that the flow of foam concentrate from the tank does not cause a false low tank reading.

Bidder Complies	
Yes	No

DOCUMENTATION

The foam proportioning system when delivered to the end user shall include: a foam concentrate compatibility list and (2) two Description, Installation and Operation Manuals. The foam proportioning system shall have a one-year limited manufacturer warranty.

Accurate concentration proportioning can be achieved, based on the following water flows:

- 167 GPM water at 3.0% concentration
- 500 GPM water at 1.0% concentration
- 1000 GPM water at .5% concentration
- 1800 GPM water at 0.1% concentration

Note: Multiple discharges plumbed to this system may affect performance if the flow rates are exceeded by any one discharge or the totality of multiple discharges at one time!

CAFSPRO 750 GPM – QMAX / STANDARD MANIFOLD

SYSTEM COMPONENTS

- Rotary Air Compressor (assembled to fire pump split-shaft transmission).
- Rotary Gear Pump, Discharge-Side Foam-Concentrate Proportioning System.
- Foam Injection Check Valves (installed in stainless manifold).
- Foam Concentrate Reservoir(s) (supplied by installer).
- Foam Strainer(s).
- Stainless Steel discharge piping up to 5 CAFS discharges and deck gun by-pass.
- Mixing Chambers.
- Stainless Steel Discharge Piping Check valves (installed).
- Rotary Air Compressor Cooling System.
- SCFM Air Flowmeter with integrated hourmeter & temperature warnings.
- Push-button, automatic CAFS Operating Controls.
- Apparatus Fire Pump split-shaft gearbox with PTO to include a clutch disengagement mechanism for the rotary air compressor.

HALE AUTOFILL WATER SYSTEM

Hale Autofill water booster tank refill system. The Autofill works in connection with the 4-light Class 1 booster tank water level gauge. When the water in the tank drops to ¾ full, the Autofill direct fill system automatically fills the booster tank when provided with an appropriate water supply line from a hydrant.

AIR COMPRESSOR

The air compressor shall be of the rotary type rated at producing a minimum flow of 210 standard cubic feet per minute (338 normal cubic meters per hour) of compressed air at 100 PSIG (7 BAR).

The air compressor shall have a continuous duty rating of 150 PSIG (10 BAR). Rotary Compressors with a continuous duty rating under 150 PSIG (10 BAR) are not acceptable.

Components to be included with the air compressor and to be factory installed and tested include: 1) An oil reservoir separator, 2) an air filter, 3) an oil filter and 4) a water to oil heat exchanger. The heat exchanger shall be capable of cooling the compressor oil at all expected operating conditions and temperatures. The heat exchanger shall be capable of 500 psig test pressures on the water side and 250 psig on the air side. The oil cooler assembly shall be mounted on the pump and tested at the manufacturers' facility. An oil temperature read-out to show the temperature in the oil reservoir

Bidder Complies	
Yes	No

separator shall be integrated with the display on the apparatus pump panel. A built-in electronic alarm shall warn of excessive operation temperatures. An automatic air system blow down valve shall be installed in the system to relieve pressure in the oil reservoir separator and air compressor rotary end when the unit is shut down.

A manual over-ride control shall provide for fixed pressure operation to run rescue tools without CAFS from an auxiliary port, or to over-ride electrical controls in event of a mal-function.

STANDARD MANIFOLD

A Hale 750 GPM manifold 546 2540 10 0 with valve flange connections for up to 5 CAFS discharges shall be provided.

The discharge piping shall be equipped with a properly sized flowmeter sensor, based on the systems capabilities.

The CAFS and foam system shall be plumbed to the following discharge/s through the discharge piping or manifold system:

Crosslay / Speedlay #1 discharge.

Crosslay / Speedlay#2 discharge.

Front discharge.

Officer's side rear 21/2" hose bed discharge.

3" Deck gun.

The foam proportioning system shall be supplied from the foam concentrate storage tank/s. The tank/s shall be constructed of materials compatible with foam concentrates being used in the system. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements. Foam tank lid shall be sealed and latched in accordance with NFPA standards. If required a provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors.

HALE EZ-FILL FOAM TANK REFILL SYSTEM

The apparatus shall be equipped with a Hale EZ-Fill foam transfer system for refilling the on-board foam cell. The system operates by attaching a suction hose to a pre-plumbed panel connection using a positive seal quick connect fitting. The pickup wand is then placed in the foam concentrate container. EZ-Fill is an easy-to-operate fixed-mount 12- or 24-volt drive 5-gpm foam tank refill pump system. EZ-Fill features push-button smart switch technology. Just press the "Fill" or "Flush" button for a moment and the unit shall cycle either filling the foam concentrate reservoir or running through a flush cycle.

12 VOLT POWER FILTER KIT

Hale item 546 1870 00 0 Power Filter Kit shall be provided.

FOAM CONCENTRATE

The foam system shall be capable of injecting the following foam concentrates:

- **Class A foam selected.**
- **No Class B Foam**

Bidder Complies	
Yes	No

****** PUMP PANEL & ACCESSORIES *******

PUMP PANEL - TOP MOUNT

The pump operator's control panel shall be located above the pump towards the rear of the transverse walkway area with the operator facing the rear of the apparatus to operate the pump controls.

The top, front and side panels shall be completely removable and designed for easy access and servicing.

TOP MOUNT GAUGE PANEL

The top operator's panel shall be fabricated from stainless steel with a grit standard polished finish, (to be a **NON-GLARE FINISH)**

HINGED GAUGE PANEL

An angled full width, horizontally hinged gauge access panel shall be provided at the top mount operator's position. Chrome plated positive locks shall be provided along with gas shock holders to secure the panel in the opened position.

VERTICALLY HINGED, PUMP PANEL DRIVER SIDE

The driver side pump panel shall be, vertically hinged, to provide complete access to the pump and plumbing on the driver side of the pump enclosure. The panel shall be equipped with stainless steel hinges and secured with push type locks to hold the panels closed. The drains located on the driver side panel shall be fastened to the lower panel, which shall be stationary.

VERTICALLY HINGED, PUMP PANEL OFFICER SIDE

The officer's side pump panel shall be, vertically hinged, to provide complete access to the pump and plumbing on the officer side of the pump enclosure. The panel shall be equipped with stainless steel hinges and secured with push type locks to hold the panels closed. The drains located on the officer's side panel shall be fastened to the lower panel, which shall be stationary.

PANEL FASTENERS

Stainless steel machine screws and lock washers shall be used to hold these panels in position. The panels shall be easily removable to provide complete access to the pump for major service.

CAPS AND ADAPTERS SAFETY TETHER

All applicable discharge and suction caps, plugs and adapters shall be equipped with chrome plated ball chain and secured to the vehicle.

PUMP PANEL TRIM PLATES

A high polished trim plate shall be provided around each discharge port and suction inlet opening to allow accessibility to the respective valve for service and repairs.

Bidder Complies	
Yes	No

DISCHARGE GAUGE TRIM BEZELS

Each individual discharge gauge shall be installed into a decorative chrome-plated mounting bezel that incorporates valve-identifying verbiage and color labels.

COLOR CODED IDENTIFICATION TAGS

Color coded identification tags shall be provided for all gauges, controls, connections, switches, inlets and outlets.

PUMP OPERATOR'S PANEL LIGHT SHIELD

The pump operator's panel shall be equipped with a light shield that shall be full width of the control panel, and shall be positioned to cover the lights and prevent glare.

The light shield shall be equipped with the following lights:

- Three (3) 20" super bright led strip lights.

One (1) light under the operator's panel light shield shall be actuated when fire pump is engaged in addition to the pump engaged light.

DRIVER SIDE PUMP PANEL LIGHTING

The driver side pump panel and running board shall be illuminated by the following lights:

- Four (4), 3-LED illumination lights mounted in horizontal stainless steel bezels and mounting gaskets.

The lights shall be switched with the top mount panel lights.

TOP MOUNT WALKWAY LIGHTING

The top mount walkway shall be illuminated by the following lights:

- Four (4), 3-LED illumination lights mounted in horizontal stainless steel bezels and mounting gaskets.

The lights shall be controlled with the marker lights.

OFFICER SIDE PUMP PANEL LIGHTING

The officer side pump panel and running board shall be illuminated by the following lights:

- Four (4), 3-LED illumination lights mounted in horizontal stainless steel bezels and mounting gaskets.

The lights shall be switched with the top mount panel lights.

PUMP OPERATOR'S PANEL

Particular attention is to be given to functional arrangement of all controls. The pump operator's panel shall accommodate the following:

- Hinged gauge panel
- Water tank fill valve
- Auxiliary suction valve control

- All discharge valve controls
- Auxiliary engine cooler controls
- Water tank suction control valve
- Pump primer valve
- Engine throttle control
- Master compound vacuum gauge
- Master pressure gauge
- Individual discharge gauges
- Pump shift engaged indicator light
- Water tank water level indicator
- Engine tachometer
- Engine oil pressure gauge with audible alarm
- Engine water temperature gauge with audible alarm
- Low voltage light and audible alarm
- Pump panel light switch
- Speed counter (Underwriters)
- Pump performance plate (Underwriters)
- Pump serial No. plate
- Master pump drain valve
- Individual drains
- Voltmeter
- Air inlet/outlet at lower driver side panel
- Hale TPM Relief valve control

PUMP TEST PORTS

The pump panel shall be equipped with Vacuum & Pressure test plugs to allow for test equipment to monitor pump pressure and vacuum levels. Chrome plugs and labels shall be provided for the test ports.

MASTER PUMP GAUGES

The master pump intake pressure and vacuum, and the main pump discharge pressure shall be indicated on the pressure and vacuum gauge and the discharge gauge.

ENGINE COOLER

An auxiliary cooler or heat exchanger shall be installed in the engine compartment between the engine and the chassis radiator. The cooler shall permit the use of water from the pump for cooling system. The cooling shall be done without mixing engine and pump water.

TANK LEVEL GAUGE

An Innovative Controls model #3030385, Ultra-Bright LED water level monitor shall be provided on the pump operator's panel. The level gauge shall contain high intensity LED's on the display allowing the full, 3/4, 1/2, 1/4 and refill levels to be easily distinguished at a glance. It shall be maintenance free and field adjustable.

The gauge shall use a pressure transducer #3030376-01 installed near the bottom of the water tank to determine the correct volume in the tank.

An Innovated Controls model #3030362, remote relay module shall be furnished to provide outputs for large indicator lights on the side of the vehicle.

Bidder Complies	
Yes	No

LARGE LIGHT WATER LEVEL GAUGE, EACH SIDE OF CAB

A large light water level gauge system shall be provided on both sides of the cab. Each side shall have a Whelen model PSTANK, LED strip light, surface mounted, behind the rear crew door above the handrail.

The strip light shall indicate the following water levels:

- Green LED cluster — Full tank
- Blue LED cluster — 3/4 tank
- Amber LED cluster — 1/2 tank
- Red LED cluster — 1/4 tank

The red LED's shall burn steady to indicate 1/4 tank and shall start to flash when the water level drops below 1/4 tank. To prevent distraction to drivers, this tank level gauge shall be wired to display only when the park brake is engaged.

This cluster of lights need to be back marked to show the difference between the water level lights and the foam level lights.

FOAM TANK LEVEL GAUGE - FOAM TANK "A"

An Innovative Controls model #3030386-01, Ultra-Bright LED foam level monitor shall be provided on the pump operator's panel. The level gauge shall contain high intensity LED's on the display allowing the full, 3/4, 1/2, 1/4 and refill levels to be easily distinguished at a glance. It shall be maintenance free and field adjustable.

The gauge shall use a pressure transducer installed near the bottom of the foam tank to determine the correct volume in the tank.

LARGE LIGHT FOAM LEVEL GAUGE, EACH SIDE OF CAB

A large light foam level gauge system shall be provided on both sides of the cab. Each side shall have a Whelen model PSTANK, LED strip light, surface mounted, behind the rear crew door above the handrail.

The strip light shall indicate the following water levels:

- Green LED cluster — Full tank
- Blue LED cluster — 3/4 tank
- Amber LED cluster — 1/2 tank
- Red LED cluster — 1/4 tank

The red LED's shall burn steady to indicate 1/4 tank and shall start to flash when the foam level drops below 1/4 tank. To prevent distraction to drivers, this tank level gauge shall be wired to display only when the park brake is engaged

This cluster of lights need to be back marked to show the difference between the foam lights and the water level lights.

WATER TANK

The water tank shall have a capacity of 750-1000 gallons, constructed from Poly material.

FOAM TANK "A"

In addition to the water capacity of the tank, a 30 gallon integral foam storage area shall be built into the water tank. The foam tank shall have a latched fill tower, properly labeled as the foam fill point. A valved drain shall be provided.

TANK CONSTRUCTION

The Poly water tank shall be constructed of PT3 polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from 1/2 to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3 polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

CAPACITY CERTIFICATION

All tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank's III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight.

TANKNOLOGY TAG

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

ISO CERTIFICATION

The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2000 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

Bidder Complies	
Yes	No

TANK LID

The tank cover shall be constructed of 1/2" thick PT3 polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowers shall accommodate the necessary lifting hardware.

TANK FILL TOWER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3 polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 4" I.D. schedule 40 P.V.C. combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow behind the chassis rear axle.

TANK SUMP

The tank sump shall be a minimum of 10" wide x 10" long x 3" deep. An anti-swirl plate shall be mounted inside the sump, approximately 1" above the bottom of the sump.

A 3" drain plug shall be provided.

OUTLETS

There shall be two (2) standard tank outlets; one for tank-to-pump suction line which shall be a minimum of 4" coupling and one for a tank fill line which shall be a minimum of a 2" N.P.T. coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

WATER TANK MOUNTING

The tank shall rest on the body cross members, and shall be insulated from these cross members. The tank shall sit cradle-mounted. Angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

WATER TANK SLEEVE

A 4" inside diameter, water tank sleeve shall be provided to accommodate rear discharge or suction plumbing to the rear of the unit. The tank sleeve shall be provided as part of the tank assembly by the tank manufacturer to allow installation of piping.

APPARATUS BODY DESIGN CONSTRUCTION

The body side and compartment assemblies shall be designed and assembled to provide maximum strength and durability under all operating conditions.

The body cannot be constructed of steel or Poly, but may be constructed of Aluminum or Stainless Steel.

Special attention shall be taken to minimize corrosion on all fabricated parts and structural members of the body. All bolt-on components shall be provided with a dissimilar metals isolation barrier to prevent electric corrosion. The body design shall also incorporate removable panels to access spring hangers, rear body mounts and fuel tank sending units.

The body shall be completely isolated from the cab and pump module structure.

Dimensions used in this specification shall be the general outer dimension taken from a typical line diagram of the apparatus. These dimensions shall not take into account items like material thickness, access panels, doors, and other installed options.

COMPARTMENT TOPS

Compartment ceilings shall be a design as part of the body construction process. Compartment designs that do not have a welded in ceiling shall be acceptable.

COMPARTMENT DRIP MOLDING

Compartment doors shall have an integral drip molding built into the door header to provide protection against water runoff.

REAR BODY PANEL

The rear body panel shall extend the full width between the body side compartments. This panel shall be full height from the rear step to the hose bed floor. No part of the rear panel shall be attached to the booster tank. The rear body panel material can be aluminum or stainless steel treadplate as standard. If Chevron striping is specified for the rear of the body then smooth aluminum or stainless steel can be utilized.

SUB STRUCTURE

This structure shall be designed to totally support the full length and width of the body and shall be welded/bolted to the body side compartments by use of reinforcement plates to incorporate the compartments into an integral part of the body weldment.

This design shall provide storage capacity in each side compartment for a minimum of 500 lbs of equipment, and a minimum of 1000 lbs of equipment in the rear step compartment.

FIRE BODY WIDTH

The fire body shall be a minimum of 96” to 100" wide,(same width of the cab) to provide the maximum amount of usable hose bed and compartment space. The side body compartments shall be in the area of 24” to 29" deep in any full depth areas, and in the area of 12" to 16” deep in any split depth areas.

Bidder Complies	
Yes	No

BODY FENDER

The body fender shall be in the area of 64" long, this shall allow for the suspension and related components to be contained within the fender, preventing any intrusion into the body compartment storage area. Bodies with notches in the front and/or rear compartment for suspension components are not acceptable.

DRIVER SIDE - FRONT SECTION OF FENDER

A storage compartment shall be inserted into the fender to provide a storage area for up to three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender, and shall be in the area of 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

If sizing of fender area allows for two SCBA bottles then note that on bid and sizing.

DRIVER SIDE - REAR SECTION OF FENDER

A storage compartment shall be inserted into the fender to provide a storage area for one (1) customer supplied fire extinguishers of similar size) or (two SCBA bottles). The storage area shall be sized as tall and wide as possible in the fender, and shall be in the area of 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the devices.

Note on bid what sizes of space you are specking.

OFFICER SIDE - FRONT SECTION OF FENDER

A storage compartment shall be inserted into the fender to provide a storage area for up to three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender, and shall be in the area of 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

If sizing of fender area allows for two SCBA bottles then note that on bid and sizing.

OFFICER SIDE - REAR SECTION OF FENDER

A storage compartment shall be inserted into the fender to provide a storage area for one (1) customer supplied fire extinguishers of similar size) or (two SCBA bottles). The storage area shall be sized as tall and wide as possible in the fender, and shall be in the area of 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the devices.

Note on bid what sizes of space you are specking.

FENDER STORAGE DOORS

The fender storage area(s) shall be enclosed by a hinged door. The back side of the door shall have a section of material installed to protect the door surface from the items stored in the compartment. Each door shall be tied into the compartment door ajar/do not move apparatus warning system.

DRIVER SIDE BODY COMPARTMENTATION

One full height/full depth compartment shall be provided forward of the rear wheels. The compartment dimensions shall be in the area of 36" to 48" wide x 68" to 70" tall x as deep as allowable.

One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be in the area of 58 to 64" wide x 36" to 40" high x as deep as allowable.

One full height/full depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be in the area of 46" to 54" wide x 68" to 70" tall x as deep as allowable.

OFFICER SIDE BODY COMPARTMENTATION

One full height/split depth compartment shall be provided forward of the rear wheels. The compartment dimensions shall be in the area of 36" x 48" wide x 68" to 70" tall x as deep as allowed in the lower area, and as deep as allowed in the upper area.

One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be in the area of 58" to 64" wide x 36" to 40" high x as deep as allowable.

One full height/split depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be in the area of 46" to 54" wide x 68" to 70" tall x as deep as allowable in the lower area, and as deep as allowable in the upper area.

REAR STEP COMPARTMENT

An equipment storage compartment shall be provided on the rear of the body at the rear step area. The rear step compartment shall be in the area of 34" to 46" Wide x 28" to 48" High x as deep as allowable.

The rear step compartment shall have full side panels which shall isolate this storage area from the side body compartments.

The rear step compartment shall be equipped with a rollup style door.

EXTENDED REAR STEP - TAPERED CORNERS

The extended rear step shall be at least 12" deep, extended beyond the body compartments. The step shall be in the area of 96" to 100" wide, with tapered corners for better clearance. The step shall be fabricated from aluminum treadplate or stainless steel, and shall be rigidly reinforced.

The rear edge of the step shall be designed to accommodate the rear clearance lights, recessed for protection in the step reinforcement channel. The step shall be bolted into place with a minimum 1/2" clearance gap between the step and rear body panel.

HOSE BED

The hose bed shall be located directly above the booster tank and shall be free from all sharp objects such as bolts, nuts, etc., to avoid damage to fire hose.

For added strength, the hose bed side walls shall provide a mounting surface for devices like warning lights and scene lights. The inner hosebed side walls shall be brushed aluminum/stainless

Bidder Complies	
Yes	No

steel panels, which shall prevent damage to painted surfaces when deploying hose. The front wall shall be flanged inward 2" with a 1" downward return to provide additional rigidity to the front wall.

If area present a spot for a bracket to be mounted on rear of apparatus, to secure the end of the 5” supply line from the hose bed for easy access.

Hose bed area to accommodate coffin style box’s if area permits for storage. (much needed)

HOSE BED CAPACITY

The hose bed shall provide a minimum of hose storage area to meet NFPA 1901 minimum pumper hose storage requirement.

The apparatus weight analysis shall be based on 1000’ of 5” hose and 400’ of 21/2” hose, unless otherwise specified. If the hose load to be carried exceeds this minimum, the purchaser shall advise the manufacturer prior to contract so adequate chassis carrying capacity can be provided.

HOSE BED FLOORING

Flooring to be constructed from extruded aluminum/stainless steel and be properly spaced for ventilation. The flooring shall be smooth and free from sharp edges to avoid hose damage. The hose bed floor shall be removable to provide access to inner body framework.

HOSE BED PARTITION

Two (2) fully adjustable, aluminum/stainless steel hose bed partition shall be provided. Partition shall be easily adjustable by means of channels located at the front and rear of the hose bed. Partition shall be removable for access to the booster tank.

HOSE BED COVER, ALUMINUM/STAINLESS STEEL TREAD PLATE ROLLING/LIFT UP COVER

The top of the hosebed shall have an NFPA compliant cover installed to secure the hose from unintentionally deploying out the top or rear of the hosebed. The cover shall be a polished aluminum/stainless steel tread plate combination roller/lift-up style cover. The cover shall be capable of supporting 250 lbs at any single point on the cover. The cover shall raise to no less than 60 degrees for loading hose.

The cover shall lock in the closed position. The lift portion shall be assisted and supported by positive locking gas charged struts on each side of the cover.

Handles shall be installed on the end of the cover to assist with rolling and or lifting.

Switches shall be installed on each side of the cover to indicate when the cover is open which shall activate the “Do Not Move Apparatus” warning in the cab.
3 LED lights shall be mounted on each side, when doors are open the LED lights will come on.

An individual hinged access door shall be provided over the water tank fill tower area and foam tank fill tower area. This door shall be hinged at the front to prevent the door from opening while the apparatus is in motion. The door shall not be latched to allow the door to pop open in the event of tank over pressurization.

VINYL FLAPS

Two (2) vinyl flaps at the rear of the tread plate hose bed cover. They shall be secured to the hose bed cover with quarter turn fasteners and to the rear body with some way of fastening.

Bidder Complies	
Yes	No

ROLL-UP DOORS

Roll-up doors shall be provided on all compartments. The roll-up doors shall be constructed from aluminum/stainless steel extruded slats which shall have a flexible seal between each slat for proper sealing of the door.

A synthetic rubber seal shall be provided at each side, top and bottom edge of the door to prevent entry of dirt into the compartment.

The door shall be equipped with a lift bar style latch mechanism which shall latch at the bottom of the door mounting extrusion.

The roll-up door assembly shall be furnished with a spring-loaded, counter balance assembly to assist in door actuation.

All running board and high side compartments shall be equipped with roll-up doors.

All roll up doors shall be painted the same color as the body color where the roll up door is located.

SWEEP-OUT COMPARTMENT FLOORS

Compartment floors shall be fixed to the compartment walls and have a sweep out design for easy cleaning.

Compartments with roll-up style doors shall have the external floor flange stepped down, 1/2" high x 2" deep, to produce a sealing surface for the roll-up doors below the compartment floor. The sweep out design shall also permit easy cleaning.

COATED FASTENERS

All exterior fasteners shall be coated stainless steel screws or equivalent. Screw threads shall be coated with reusable, self-locking, sealing material to provide vibration resistance. Screw heads shall be coated with a sealing element to prevent galvanic corrosion between dissimilar metals. Non-coated screws shall only be provided as part of vendor supplied component installations.

COMPARTMENT LOUVERS

Ventilation between compartments to atmosphere shall be provided and located to avoid water entry into compartments.

ACCESS PANELS

Removable access panels shall be provided (if applicable) to access fuel tank sender, electrical junction compartment and rear body mounts.

Protective panels shall be located in the compartments providing access to the lights and associated wiring. The covers shall also serve as protective covers to prevent inadvertent damage to lights or wiring from tools or equipment located in the compartment.

BODY RUB RAILS

Sacrificial aluminum tread plate rub rails or stainless steel shall be mounted at the base of the body, extend outward. The rub rails shall extend the full length of the main body. Rub rails shall be designed to bolt to the body from the bottom side of the compartment area, so as not to damage the body side panels on initial impact and to provide for ease of replacement.

OFFICER SIDE RUNNING BOARD STORAGE WELL

A storage well, constructed of aluminum/stainless steel, shall be recessed into the officer's side running board. The storage well shall measure in the area of 9" deep x 9" wide x as long as possible between the running board support members. Drain holes shall be located in the bottom corners to allow water to drain from the storage well.

Storage well to hold 35 feet of 5" LDH

The officer side running board hose well shall be furnished with Velcro straps to secure the hose stored in the well. The straps shall be attached to each side of the hose well with stainless steel footman loops.

The officer's side storage well shall be equipped with Dri-Dek material to provide drainage and ventilation of equipment in storage well.

DRIVER SIDE RUNNING BOARD STORAGE WELL

A storage well, constructed of aluminum/stainless steel, shall be recessed into the driver's side running board. The storage well shall measure in the area of 9" deep x 9" wide x as long as possible between the running board support members. Drain holes shall be located in the bottom corners to allow water to drain from the storage well.

Storage well to hold 35 feet 5" LDH.

The driver's side running board hose well shall be furnished with Velcro straps to secure the hose stored in the well. The straps shall be attached to each side of the hose well with stainless steel footman loops.

The driver's side storage well shall be equipped with Dri-Dek material to provide drainage and ventilation of equipment in storage well.

GRAB RAILS

All hand rails shall be, designed to meet NFPA 1901 requirements.

Molded gaskets shall be installed between the handrail stanchion castings and body surfaces to prevent electrolytic reaction between dissimilar metals and to protect paint.

GRAB RAIL LOCATIONS:

Grab rails shall be provided at the following specified locations. Additional grab rails shall be provided adjacent to any additional steps specified to comply with NFPA 1901.

Two (2) vertical rails shall be mounted on the rear edge of the beavertails, one (1) each side.

One (1) horizontal, full width handrail shall be installed on the rear, below the level of the hose bed.

Two (2) vertical handrails shall be mounted on each side of the forward pump house.

FOLDING STEP(S) - BODY FRONT OFFICER SIDE

Large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, shall be provided on officer side body front to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

FOLDING STEP(S)- BODY REAR DRIVER SIDE

Large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, shall be provided on driver side body rear to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

FOLDING STEP(S) - BODY REAR OFFICER SIDE

Large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, shall be provided on officer side body rear to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

SAFETY SIGN(S) AT REAR STEP AND CROSS WALKWAY(S)

Safety sign(s) shall be located on the vehicle at the rear step, and at any cross walkway(s), to warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

REAR WHEEL WELL LINERS

Fully removable, one piece, bolt-in, aluminum/stainless steel rear wheel well liner and fenderette will be provided. The wheel well liners will be natural metal finish and will protect the front and rear compartments and main body supports from damage. Wheel well liners and fenderettes which are welded in place or are only partially removable shall not be considered.

REAR MUD FLAPS

Heavy duty mud flaps shall be provided behind the rear wheels.

REAR TOW EYES

Two (2) tow eyes shall be furnished on the rear of the vehicle. The tow eyes shall be made from plate steel and shall be bolted directly to the chassis frame rails with grade 8 bolts and shall extend below the body. The tow eyes shall be smooth and free from sharp edges, and have a minimum eyelet hole of 2-1/2". The tow eyes shall be painted.

Bidder Complies	
Yes	No

****** COMPARTMENT ACCESSORIES ******

HALF DEPTH ADJUSTABLE SHELVING

Compartment shelving shall be constructed of brush finish aluminum/stainless steel with an upward bend at front and rear, and side supports. Shelving shall be vertically adjustable with spring nuts in aluminum strut channel.

Half depth adjustable shelves shall be located as follows:

One (1) in the officer side front compartment

One (1) in the officer side rear compartment

500 POUND FLOOR MOUNTED ROLL OUT TRAYS

Floor mounted roll-out trays shall consist of heavy duty, roller bearing slide tracks with an end load rating of 500 pounds, securely fastened to the compartment floor. The tray shall be fabricated from brushed aluminum/stainless steel with a high flange on each of the four sides to assist in retaining the equipment stored on each tray. The slide tracks shall have a 100% extension, allowing the tray to extend out of the compartment completely.

The 500 pound floor mounted roll out trays shall be located as follows:

One (1) in the driver side front compartment

One (1) in the driver side rear compartment

One (1) in the officer side front compartment

One (1) in the officer side rear compartment

One (1) in the rear step compartment

ADJUSTABLE ROLL-OUT TRAYS

Roll out adjustable compartment shelving shall be constructed of brush finish aluminum/stainless steel with an upward bend at front and rear, and side supports attached to 250# rated slides. Slide out adjustable shelving shall be vertically adjustable with spring nuts in aluminum strut channel.

The adjustable roll-out trays shall be located as follows:

One (1) in the driver side front compartment (non tilt down tray)

One (1) in the driver side rear compartment (non tilt down tray)

One (1) in the driver side middle compartment (tilt down tray)

SOLID ADJUSTABLE SHELF

One (1) non sliding adjustable shelf located in drivers side rear compartment up high.

SWING OUT TOOL BOARDS

The tool boards shall be constructed of aluminum/stainless steel allowing mounting of equipment on the interior and exterior of the tool board. The tool boards shall be installed with a Performance Advantage Company PM-1000 Swing-Out Module Kit. Aluminum/stainless steel angles shall attach the hinges to Unistrut tracking to allow depth adjustments. A heavy duty latch shall be provided to secure the tool boards in the closed position. The Fire Dept. will want a sit down do discuss any changes with the tool board location and or the addition of more Performance Advantage fastlok wall pieces. The sidewall behind the tool board shall have PAC board mounted to it.

Swing out tool boards shall be located as follows:

One (1) in the officer side over the wheel high side compartment
One (1) in the driver side front compartment half height board, dimensions by fire department.

BACKBOARD STORAGE/STOKES BASKET

A storage module shall be provided for one (1)-(2) backboard(s). The module shall be constructed from aluminum/stainless steel. The location shall be determined by the fire department.

A storage module shall be provided for one stokes basket. The module shall be constructed from aluminum/stainless steel. The location shall be determined by the Fire Department, possibly in the dunnage area.

TURTLE TILE

Turtle Tile brand floor material shall be installed on all compartment floors and trays. The Turtle Tile shall be custom installed to provide full floor coverage.

Floor matting material shall be provided in all specified shelf(s) or roll-out tray(s).

The compartment flooring color shall be black.

******120/240 VOLT A.C. ELECTRICAL AND GENERATOR SECTION ******

120/240 VOLT ELECTRICAL SYSTEM TESTING

All line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for one minute. The test shall be conducted between live parts and the neutral conductor and between live parts and the vehicle frame with any switches in the circuits closed. The test shall be conducted after all bodywork has been completed. The dielectric tester shall have a minimum 500 VA transformer with a sinusoidal output voltage that can be verified.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

OPERATIONALTESTING

The apparatus manufacturer shall perform the following operation test and shall certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

The generator shall be started from a cold start condition and the line voltage electrical system shall be loaded to 100 percent of the nameplate voltage rating.

The following items shall be monitored and documented every 15 minutes:

- The cranking time until the generator starts and runs.
- The voltage, frequency, and amperes at continuous full rated load.
- The generator oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery rate charge, as applicable.
- The ambient temperature and altitude.

The generator shall operate at 100 percent of its nameplate wattage for a minimum of two (2) hours.

8000-WATT HYDRAULIC DRIVEN GENERATOR

One (1) Hydraulic Driven Generator rated at 8000 watts, 68/34 amps, 120/240VAC, 60 Hz, 1-phase shall be provided.

The system shall be designed and assembled by a company with no less than 10 years' experience in the manufacture of hydraulic driven generators. The system shall be tested at the full nameplate load prior to shipping and be accompanied with the test report. The test report shall document the generators performance at various loads from no load to full load to ensure reliable power delivery at those loads.

The motor/generator shall be placed in a frame which affords protection to the components and provides a unitized mounting module containing the motor/generator, reservoir, oil cooler, filtration, on/off manifold containing a cross port check valve allowing unit to be started and shut down remotely.

The generator shall be a commercial type with a heavy-duty bearing and of brush less design to ensure low maintenance. No brushes or slip rings shall be allowed. The reservoir shall include an oil level sight gauge, oil temperature gauge; fill cap, oil filter, and a venturi boost unit to provide positive pressure to the pump suction port.

The generator and motor shall be close coupled. No two (2) bearing generators shall be permitted.

The system must be capable of producing the full nameplate power when driven from the vehicle PTO from idle to maximum engine speed.

The generator system must be able to operate on either a Constant Engaged PTO or a Hot Shift PTO. The generator must be able to be used while vehicle is either stationary or in motion.

The hydraulic motor and pump shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. No gear pumps or motors shall be used. The pump shall match the system with the proper orifice, pressure compensator, and load sense settings to provide stable output regardless of engine rpm or electrical load demands.

The system shall be capable of normal operations using a commonly available ATF fluid, such as GM Dextron III or equivalent. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

When properly installed, the system shall be warranted for a period of not less than two (2) years or 2000 hours, whichever should come first.

The generator shall be remotely turned on/off by using a 12 VDC switch mounted on the cab dash.

A weatherproof digital Quadra meter containing the volt, amp, and frequency shall be installed near the breaker panel.

Bidder Complies	
Yes	No

GENERATOR PTO

A hot shift PTO shall be provided on the transmission for the generator. The PTO shall be controlled from the cab. The control shall include a PTO engagement switch and a PTO engaged indicator light.

GENERATOR WARRANTY

The specified generator shall have a two (2) year or two thousand (2000) hour warranty as provided by the generator manufacturer. A copy of the generator warranty shall be provided at time of delivery.

GENERATOR LOCATION

The generator shall be permanently mounted in the dunnage area if area permits.

Locating the generator greater than 144" from the main breaker panel may require the installation of an additional power disconnecting means.

120/240 VOLT LOAD CENTER

The generator output line conductors shall be wired from the generator output connections to a Square D, model #QO112L125G breaker panel. The breaker panel shall be equipped with a properly sized main breaker using two (2) of the twelve (12) spaces which leaves a total of ten (10) available spaces.

The generator output conductors shall be sized to 115% of the main breaker rating and shall be installed as indicated in the wiring section.

Ten (10) appropriately sized, 120 volt, circuit breakers shall be provided.

The breaker panel shall be located on the rear wall of the driver side front compartment.

120/240 VOLT WIRING METHODS

Wiring/conduit shall not be attached to any chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components or low voltage wiring.

All wiring shall be installed at a minimum of 12 inches away from any exhaust piping and a minimum of 6 inches from any fuel lines.

All wiring shall be securely clamped within 6 inches of any junction box and at a minimum of every 24 inches of run. All supports shall be of nonmetallic material or corrosion protected metal. All supports shall not cut or abrade conduit or cable and shall be mechanically fastened to the vehicle.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115% of the main breaker rating.

All Type SO or Type SEO cable not installed in a compartment shall be installed in wire loom. Where Type SO or Type SEO cable penetrates a metal surface, a rubber or plastic grommet or bushing shall be provided.

The installation of all 120/240 wiring shall meet the current NFPA-1901 Standards .

Bidder Complies	
Yes	No

120/240 VOLT WIRING IDENTIFICATION

All line voltage conductors located inside the main breaker panel box shall be individually and permanently identified. When pre-wiring for future power wiring installations, the non-terminated ends shall be labeled showing function and wire size.

120/240 VOLT GROUNDING

The neutral conductor of the power source shall be bonded to the vehicle fame only at the power source.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray.

In addition to the bonding required for the lower voltage return current, each body and driving/crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. The conductor shall have a minimum amperage rating of 115 percent of the name plate current rating of the power source specification label.

120/240 VOLT CIRCUIT BREAKER / RECEPTACLE INSTALLATION

The system shall be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. When multiple circuit are required, the circuits shall be wired to the breaker panel in a staggered configuration to minimize electrical loads on each breaker or generator (leg) circuit. The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage.

120/240 VOLT RECEPTACLE INSTALLATIONS

Any receptacle installed in a wet location must be a minimum of 24 inches above the ground and provided with an approved wet location cover. Wet receptacles may not be mounted at more than 45 degrees from vertical, nor can they be mounted in a face-up position.

ELECTRIC CABLE REEL

One (1), electric rewind cord reel shall be provided and wired to the breaker panel. The reel shall be securely mounted and equipped with a rewind control adjacent to the reel.

The cord reel shall be ceiling mounted in the one of the compartments or dunnage area with the Fire Dept. agreement.

The circuit breaker used to protect any device attached to the cord reel shall be sized to the smallest electrical connection used.

One (1) reel rewind switch(s) shall be provided on the compartment wall

One (1) 4-way stainless steel roller assembly shall be provided. The roller assembly opening shall be the full width of the reel drum.

One (1) cable ball stop(s) shall be installed on the cable to keep the end from passing through the roller assembly.

Bidder Complies	
Yes	No

ELECTRIC CABLE

Two hundred fifty (250) feet minimum of Type SO black 10/3 heavy duty electric cable shall be provided on the reel.

One (1), weatherproof and rugged box with handle, with four (4) three prong receptacle shall be provided on the end of the cable.

LIGHT TOWER

The apparatus shall be equipped with an all-electric floodlight tower. The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified.

The light tower shall be capable of overhanging the side of the vehicle to provide maximum illumination and a warming area adjacent to the vehicle.

The light tower shall have four (4) weatherproof LED. Light heads shall be mounted in pairs.

The light tower shall have slip-rings for full 360 rotation. Further the tower shall be capable of rotating either direction and telescoping up and down in height.

Light tower shall be controlled with a hand-held umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature.

The controls on the remote box shall be shall be located in an area agreed on with the fire department.

The tower base shall have a light the illuminates the envelope of motion during any movements of the light tower mast.

The light tower shall be aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

The four (4) LED light heads shall require one (1) 120-volt, two pole 15-amp circuit breaker.

The light tower shall be mounted on the upper custom cab roof if room allows or dunnage area. If mounted on cab it will be protected by a shield that is painted the same as top portion of cab.

Location of light tower will be where area allows for and agreed with the Fire Department.

LADDER STORAGE

The ground ladders shall be stored vertically or horizontal next to or through the water tank, behind the side body compartments, on the officer side of the apparatus.

To secure the ground ladders, a hinged rear access door shall be provided and tied into the "Do Not Move Apparatus" warning system.

Bidder Complies	
Yes	No

GROUND LADDERS

The following DUO Safety ground ladder complement shall be provided:

- One (1) DUO Safety, model 1225-A, 30', aluminum, three (3) section extension ladder or a DUO Safety model 900A 24' two (2) section ladder, shall be provided.
- One (1) DUO Safety model 575-C; 14', aluminum, straight roof ladder with folding hooks shall be provided.
- One (1) DUO Safety model 585-A; 12', folding, aluminum, attic ladder shall be provided.

****** PIKE POLES AND HOLDERS ******

PIKE POLE STORAGE

Two (2) pike pole tube(s) shall be provided. Each holder shall be accessible from the rear of the apparatus. Each pike pole holder shall be labeled to indicate the pike pole length.

The pike pole tube(s) shall be mounted in the ladder storage compartment.

Include a 6' fiberglass and a 8' fiberglass pike poles.

SUCTION HOSE STORAGE

The suction hoses shall be located beneath the hose bed, one (1) on the driver side and one (1) on the officer side, or area of design that will accommodate storage. The hose storage area shall be accessed from the rear of the apparatus. The storage area shall be enclosed with a hinged door on the rear of the body that shall be tied into the "Do Not Move Apparatus" warning system.

Note: On bodies with rollup style doors this storage area shall be behind the roll of the door and will not affect usable compartment space. On bodies with hinged style doors this storage area shall be in the top corner of the compartment.

SUCTION HOSE

Two (2) 10 foot sections of six (6) inch PVC lightweight suction hose shall be furnished (Kochek or Firequip Maxi-Flex type). Suction hose shall be for suction only and not to be used on pressurized hydrants or for relay pumping. Couplings shall be 5" Storz with folding long handles.

NOTE: All PVC suction hoses are strictly drafting hoses and must not be used on hydrants or in pressure applications, as serious personal injury or death may occur.

STRAINER

One (1) 5" Stroz low level type strainer(s) shall be provided to attach to the suction hose.

HYDRANT ADAPTER

A female swivel hydrant adapter shall be provided. One end shall be 5" storz and the other end to be 4.5" N.S.T. thread.

ADDITIONAL ITEMS SUPPLIED WITH THE VEHICLE

- 1 - Pint of touch up paint for each color
- 1 -Bag of assorted stainless steel nuts and bolts

Bidder Complies	
Yes	No

****LOOSE EQUIPMENT****

The following items shall be provided and shipped loose with the completed apparatus at the time of delivery:

- Three (3) spanner wrench set(s) with hydrant wrench and holder.
  - 1- Rescue 42 TeleCrib Truck/Tripod kit CTC – 6004 Strut kit (Fire Dept. may alter Model #)
  - 1- SuperVac 718VR3 18” Electric Variable Speed Fan (Fire Dept. may alter Model #)
  - 6- TFT Nozzles, FTTF342, (Fire Dept. may alter Model #)
  - 6- TFT HMDC-TO CAFS-Force Nozzle
  - 6- TFT HM792FTKIT Handle Kit

HAND LIGHT

Four (4) Streamlight model 44451 orange "Fire Vulcan" C4 LED rechargeable hand light(s) and 12 volt charger shall be installed as directed by the purchaser. Charger shall be wired to the chassis battery system. Mounting location in the cab to be determined by Fire Dept.

WHEEL CHOCKS

Two (2) ZICO #SAC-44 folding wheel chocks shall be mounted forward of the rear wheels on the driver side below the side running board compartments.

****** PAINT SECTION ******

PAINT, PREPARATION AND FINISH

The PPG, polyurethane finishing system, or equal, shall be utilized. A "Clear Coat" paint finish shall be supplied to provide greater protection to the quality of the exterior paint finish.

All removable items, such as brackets, compartment doors, etc. shall be painted separately to insure finish paint behind mounted items. All compartment unwelded seams exposed to high moisture environments shall be sealed using permanent pliable caulking prior to finish paint.

BODY PRIMER & PREPARATION

All exposed welds shall be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding, and finish sanding shall be used in preparation for priming.

BODY FINISH PAINT

The body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the body shall be painted utilizing the highest quality, state of the art, polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The entire body shall be buffed and detailed.

BODY PAINT

The inside and underside areas of the complete body assembly shall be painted, prior to the installation of the body on the chassis or torque box.

COMPARTMENT PAINT

The interior of the compartments shall be finish painted job color with a scuff resistant webbing type paint of a contrasting color applied over the painted surfaces.

BODY PAINT

The body paint finish shall be in a single color, to match customer furnished paint codes and requirements.

PUMP / PIPING PAINT

The pump enclosure and pump/plumbing within the pump enclosure shall be painted black.

FENDER STORAGE COMPARTMENT PAINT

The interior of the fender storage compartments (if fender compartments are specified) shall be finish painted job color.

CAB PRIMER & PREPARATION

The cab primer shall be a multi stage process. First stage shall be a coating with a two part component, self-etching, corrosion resistant primer to chemically bond the surface of the metal for increased adhesion. Other stage shall be multiple coats of a catalyzed, two component polyurethane, primer applied for leveling of small imperfections and top coat sealing.

CAB FINISH PAINT

The entire cab shall be finish sanded and prepared for final paint. Upon completion of final preparation, the cab shall be painted utilizing the highest quality, state of the art, polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The cab exterior shall be painted to match purchaser's furnished paint codes. A two-tone paint finish shall be provided with the two-tone break line located in an area agreed on with the Fire Dept.

The entire exterior finish of the cab shall be buffed and detailed.

CAB INTERIOR PAINT

The interior metal surfaces of the cab shall be finish painted the same color as the main exterior color.

CHASSIS PAINT

The chassis frame rails, suspension and axles shall be painted black with a Polyurethane base paint prior to installation of any air lines or electric systems to ensure proper serviceability.

Bidder Complies	
Yes	No

PAINT CODES

The paint shall match customer furnished paint code(s) and layout. The paint code(s) shall be as indicated below:

- **PRIMARY PAINT COLOR**

  Single Color: *TBD* *Paint Code#* *TBD*

- **SECONDARY PAINT COLOR**

  Two/Tone Color: *TBD* *Paint code#* *TBD*

TOUCH-UP PAINT

One (1) pint of each exterior color paint for touch-up purposes shall be supplied when the apparatus is delivered to the end user.

FINALIZATION & DETAILING

Prior to delivery the vehicle, the interior and exterior be cleaned and detailed. The finalization process detailing shall include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

RUST PROOFING

The entire unit shall be thoroughly rust proofed utilizing rustproof and sound deadening materials applied in manufacturer recommended application procedures. Rust proofing shall be applied during the assembly process and upon completion to insure proper coverage in all critical areas.

****** LETTERING AND STRIPING ******

COMPUTER GENERATED LETTERING

The lettering and striping shall be custom designed utilizing state of the art computer software and computerized cutting machines. The manufacturer shall employ a full time artist / designer to generate all lettering, decals, and striping to meet the requirements of the Fire Department. The artwork for the lettering and striping shall be kept on record by the apparatus manufacturer to allow for ease in duplication for the Fire Department.

LETTERING FONT

The lettering shall be designed and cut with a basic block type font:

"BLOCK TYPE FONT"

****** NFPA REQUIRED SCOTCH-LITE STRIPING ******

SCOTCH-LITE STRIPE

A four (4) inch high "Scotch-Lite" stripe shall be provided. The stripe shall be applied on a minimum of 60 percent of each side of the unit, 60 percent on the rear of the unit and 40 percent on the front of the unit. The Scotch-Lite stripe layout shall be determined by the Fire Department.

The Scotch-Lite shall be white in color.

Bidder Complies	
Yes	No

REAR CHEVRON STRIPING

At least 50% of the rear facing vertical surface shall be covered with alternating strips of reflective striping.

The striping shall be 6" Scotch-Lite.

The Scotch-Lite shall be Ruby Red and Lemon Yellow in color.

******* WARRANTIES & REQUIRED INFORMATION *******

WARRANTY, STARTING DATE

Warranty coverage by the manufacturer shall begin on the date of delivery to the customer.

WARRANTY - CUSTOM CHASSIS

The specified vehicle shall include a one (1) year new vehicle warranty, upon delivery and acceptance of the vehicle. The warranty shall ensure that the vehicle has been manufactured to the proposed contract specifications and shall be free from defects in material and workmanship that may appear under normal use and service within the warranty period. The warranty may be subject to different time and mileage limitations for specific components and parts. This warranty is issued to the original purchaser of the vehicle.

The warranty shall not apply to tires, batteries, or other parts or components that are warranted directly by their manufacturers. The warranty shall not apply to routine maintenance requirements as described in the service and operators manual. No warranty whether express, implied, statutory or otherwise including, but not limited to any warranty of merchantability or fitness for purpose shall be imposed.

OVERALL UNIT AND CUSTOM CHASSIS

All components and parts of the vehicle are warranted for a period of at least one (1) year from acceptance of the vehicle, unless excluded elsewhere in this warranty or described as having longer time limitations.

WARRANTY - ENGINE

The specified fire service rated engine shall be provided with at least a five (5) year engine manufacturer's warranty. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

WARRANTY - TRANSMISSION

The specified Allison transmission shall be provided with at least a five (5) year warranty. A copy of the Allison transmission warranty shall be supplied to the purchaser to define additional details of the warranty provisions.

WARRANTY - CUSTOM CHASSIS FRAME RAILS

The purchaser requires that the custom chassis frame shall be warranted for an unlimited time period.

CROSSMEMBERS WARRANTY

A lifetime warranty shall be provided on all chassis frame cross members.

WARRANTY - STEERING UNIT

The proposed steering gear shall be warranted for a period of at least three (3) years from the first date of service or 150,000 miles (241,401 kilometers), whichever occurs first. The product shall be free from defects in material and workmanship under normal use in applications approved in advance.

WARRANTY - FRONT AXLE

The axle/s shall be furnished with at least a two (2) year parts and labor warranty. The wheel seals, gaskets and wheel bearings shall have a one (1) year warranty. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

WARRANTY - REAR AXLE

The axle/s shall be furnished with at least a two (2) year parts and labor warranty. The wheel seals, gaskets and wheel bearings shall have a one (1) year warranty. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

WARRANTY - CAB STRUCTURE

The cab shall be warranted against structural defects for a period of at least ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

WARRANTY - BODY STRUCTURE

The body shall be warranted against structural defects for a period of at least ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

WARRANTY - CORROSION

The cab and body shall be warranted against rust-through or perforation, due to corrosion from within, for a period of at least ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint is not covered by this warranty.

WARRANTY - PAINT

The paint finish shall be warranted for a period of at least ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

WARRANTY - LETTERING

The apparatus manufacturer will provide at least a five (5) year warranty against defects in material and workmanship for all graphic processes. Any valid claims must be made in writing within 15 days of the determination of any defects to the manufacturer's fire apparatus. The manufacturer will at its option make any necessary repairs either at a local authorized service center or at the factory, if required. The manufacturer will make the final decision as to where the repairs are to be made and any transportation cost are the owner’s responsibility. The manufacturer will at its option, repair or replace any verified defects in workmanship or materials at no cost to the owner provided all the requirements of this warranty have been met.

The manufacturer will not be liable to the original purchaser or anyone else for consequential, incidental, special or direct damages, including, but not limited to, any claims for loss of profits, down

Bidder Complies	
Yes	No

time, loss of use or inconvenience. THE COMPANY MAKES NO OTHER WARRANTY, EXPRESSED OF IMPLIED, AND SPECIFICALLY, DISCLAIMS ANY IMPLIED WARRANTY INCLUDING THE WARRANTY OF MERCHANTABILITY.

The manufacturer continually strives to improve its products and therefore, reserves the right to make improvements or changes without incurring any obligations to make such changes or additions on equipment previously sold.

WARRANTY - STAINLESS STEEL PLUMBING WARRANTY

The stainless steel plumbing shall be warranted for a period of at least ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

WARRANTY - REAR SUSPENSION

The manufacturer hereby warrants to the original Buyer, that leaf spring products installed shall be free of defects in material and workmanship for at least one (1) year. The “Warranty Period” commences on the date the original Buyer takes delivery of the product from the manufacturer.

WARRANTY - WATER TANK

The water tank shall be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty shall be supplied to define additional details of the warranty provisions.

WARRANTY - FIRE PUMP

Hale Products, Incorporated ("Hale") hereby warrants to the original buyer that products manufactured by Hale shall be free of defects in material and workmanship for a period of five (5) years from the date product is first placed into service or five and one-half (5 1/2) years from date of shipment by Hale, whichever period shall be first to expire. Within this warranty period Hale will cover parts and labor for the first two (2) years and parts only for years three (3) through five (5).

WARRANTY - COMPRESSED AIR FOAM SYSTEM - CAFSPRO

Hale Products, Inc. (HALE) hereby warrants to the original Buyer that products manufactured by Hale shall be free of defects in material and workmanship for at least one (1) year. The “Warranty Period” commences on the date the original Buyer takes delivery of the product from the manufacturer.

WARRANTY - HEAVY DUTY VALVES

Akron Brass warrants Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass shall repair or replace any Heavy Duty Swing Out Valve which fails to satisfy this warranty.

WARRANTY - SEATING

Seat manufacturer shall warrant each new seat manufactured, to be free from defects in materials and workmanship when delivered to the original purchaser for a period of at least five (5) years.

Labor to remove or reinstall and transportation of defective items will not be covered by, or any allowance made for said cost under this warranty.

WARRANTY - GENERATOR

The specified generator shall have at least a two (2) year or two thousand (2000) hour warranty as provided by the generator manufacturer. A copy of the generator warranty shall be provided at time of delivery.

NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT

The following loose equipment as outlined in NFPA 1901, 2009 edition in accordance with the applicable requirements unless supplied by the manufacturer or sales rep organization, will be provided by the fire department. All loose equipment will be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

Section 5.7 Equipment.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

5.7.1 Ground Ladders.

5.7.1.1 All fire department ground ladders carried on the apparatus shall meet the requirements of NFPA 1931, Standard for Manufacturer's Design of Fire Department Ground Ladders, except as permitted by 5.7.1.3 and 5.7.1.4.

5.7.1.2 At a minimum, the following fire department ground ladders shall be carried on the apparatus:

(1) One straight ladder equipped with roof hooks
(2) One extension ladder
(3) One folding ladder

5.7.1.3 Stepladders and other types of multipurpose ladders meeting ANSI AI4.2, Ladders - Portable Metal- Safety Requirements, or ANSI A14.5, Ladders - Portable Reinforced Plastic Safely Requirements, with duty ratings of Type IA or lAA shall be permitted to be substituted for the folding ladder required in 5.7.1.2(3).

5.7.1.4 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 5.7.1.2 provided they meet either ANSI AI4.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

Section 5.7.2 Suction Hose or Supply Hose.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

5.7.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

5.7.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

5.7.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1 (b) or Table 16.2.4.1(c).

5.7.2.1.3 Where supply hose is provided. It shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

5.7.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, Standard on Fire Hose.

Section 5.8 Minor Equipment.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

5.8.2 Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus:

(1) 800 ft (240 m) of 2 1/2 in. (65 mm) or larger fire hose
(2) 400 ft (120 m) of 1 1/2 in. (38 mm), 1 3/4 in. (45 mm), or 2 in. (52 mm) fire hose
(3) One handline nozzle. 200 gpm (750 L/min) minimum
(4) Two handline nozzles. 95 gpm (360 L/min) minimum
(5) One playpipe with shutoff and 1 in. (25 mm), 1 1/8 in. (29 mm), and l 1/4 in. (32 mm) tips

5.8.3 Miscellaneous Equipment. The following additional equipment shall be carried on the apparatus:

(1) One 6 lb (2.7 kg) flathead axe mounted in a bracket fastened to the apparatus
(2) One 6 lb (2.7 kg) pickhead axe mounted in a bracket fastened to the apparatus
(3) One 6 ft (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus
(4) One 8 ft (2.4 m) or longer pike pole mounted in a bracket fastened to the apparatus
(5) Two portable hand lights mounted in brackets fastened to the apparatus
(6) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus
(7) One 2 1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus
(8) One self-contained breathing apparatus (SCBA) complying with NFPA 1981, Standard on Open-Circuit Self Contained Breathing Apparatus (SCBA) for Emergency Services, for each assigned sealing position. But not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
(9) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space
(10) One first aid kit
(11) Four combination spanner wrenches mounted in brackets fastened to the apparatus
(12) Two hydrant wrenches mounted in brackets fastened to the apparatus
(13) One double female 2 1/2 in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the apparatus
(14) One double male 2 1/2 in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus
(15) One rubber mallet, suitable for use on suction hose connections, mounted in a bracket fastened to the apparatus
(16) Two salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m)
(17) Two or more wheel chocks. Mounted in readily accessible locations, that together will hold the apparatus. When loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
(18) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
(19) Five fluorescent. orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroflective white band no more than 4 in. (102 111m) from the top of the cone, and an additional 4 in. (102 mm) retroflective white band 2 in. (51 mm) below the 6 in. (152 mm) hand
(20) Five illuminated warning devices such as highway flares, unless the live fluorescent orange traffic cones have illuminating capabilities
(21) One automatic external defibrillator (AED)

5.8.3.1 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

5.8.3.2 If none of the Pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be

carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

5.8.3.3 If the pumper is equipped with an aerial device with a permanently mounted ladder, four ladder belts meeting the requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services shall be provided.

5.8.3.4 If the apparatus does not have a 2 1/2 in. intake with NH threads, an adapter from 2 1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

5.8.3.5 If the supply hose carried has other than 2 1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2 1/2 in. NH thread male discharge and to allow the hose to connect to a 2 1/2 in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

14.1.8.4 Fire Helmet.

It is the responsibility of the purchaser to ensure that "Fire helmets shall not be worn by persons riding in enclosed driving and crew areas any time the apparatus in placed in service.

14.1.8.4.1 A location for helmet storage shall be provided.

14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2.

14.1.10 SCBA Mounting.

It is the responsibility of the purchaser to ensure that any SCBA equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

14.1.10.1 Where SCBA units are mounted within a driving or crew compartment, a positive latching mechanical means of holding the SCBA device in its stowed position shall he provided such that the SCBA unit cannot be retained in the mount unless the positive latch is engaged.

14.1.10.2 The bracket holding device and its mounting shall retain the SCBA unit when subjected to a 9 G force and shall be installed in accordance with the bracket manufacturer's requirements.

14.1.10.3 If the SCBA unit is mounted in a seatback, the release mechanism shall be accessible to the user while seated.

14.1.11 Equipment Mounting.

It is the responsibility of the purchaser to ensure that any equipment installed on the apparatus by them or their subcontractor meets the following requirements prior to placing it in service.

14.1.11.1 All equipment required to be used during an emergency response shall be securely fastened.

14.1.11.2 All equipment not required to be used during an emergency response, with the exception of SCBA units, shall not be mounted in a driving or crew area unless it is contained in a fully enclosed and latched compartment capable of containing the contents when a 9 G force is applied in the longitudinal axis of the vehicle or a 9G force is applied in any other direction, or the equipment is mounted in a bracket(s) that can contain the equipment when the equipment is subjected to those same forces.

Section 15.9.3 Reflective Striping.

It is the responsibility of the purchaser to ensure that Reflective Striping has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

15.9.3.1"' A retro reflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

Bidder Complies	
Yes	No

15.9.3.1.1 The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

15.9.3.1.2 The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

15.10 Hose Storage.

It is the responsibility of the purchaser to ensure that any hose storage area includes a positive means to prevent unintentional deployment in order to achieve compliance with the standard prior to placing it in service.

15.10.7 Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, sides, front, and rear of the hose storage area while the apparatus is underway in normal operations.

750-1000 GALLON PUMPER WITH CAFS	Bidder Complies	
	Yes	No